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CENTRAL AND SOUTHERN FLORIDA PROJECT

COMPREHENSIVE EVERGLADES RESTORATION PLAN

COMPREHENSIVE EVERGLADES
RESTORATION PLAN

PROJECT MANAGEMENT PLAN

Southern Golden Gate Estates Hydrologic Restoration Project

U.S. Army Corps of Engineers
Jacksonville District

South Florida
Water Management District

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LIST OF ACRONYMS

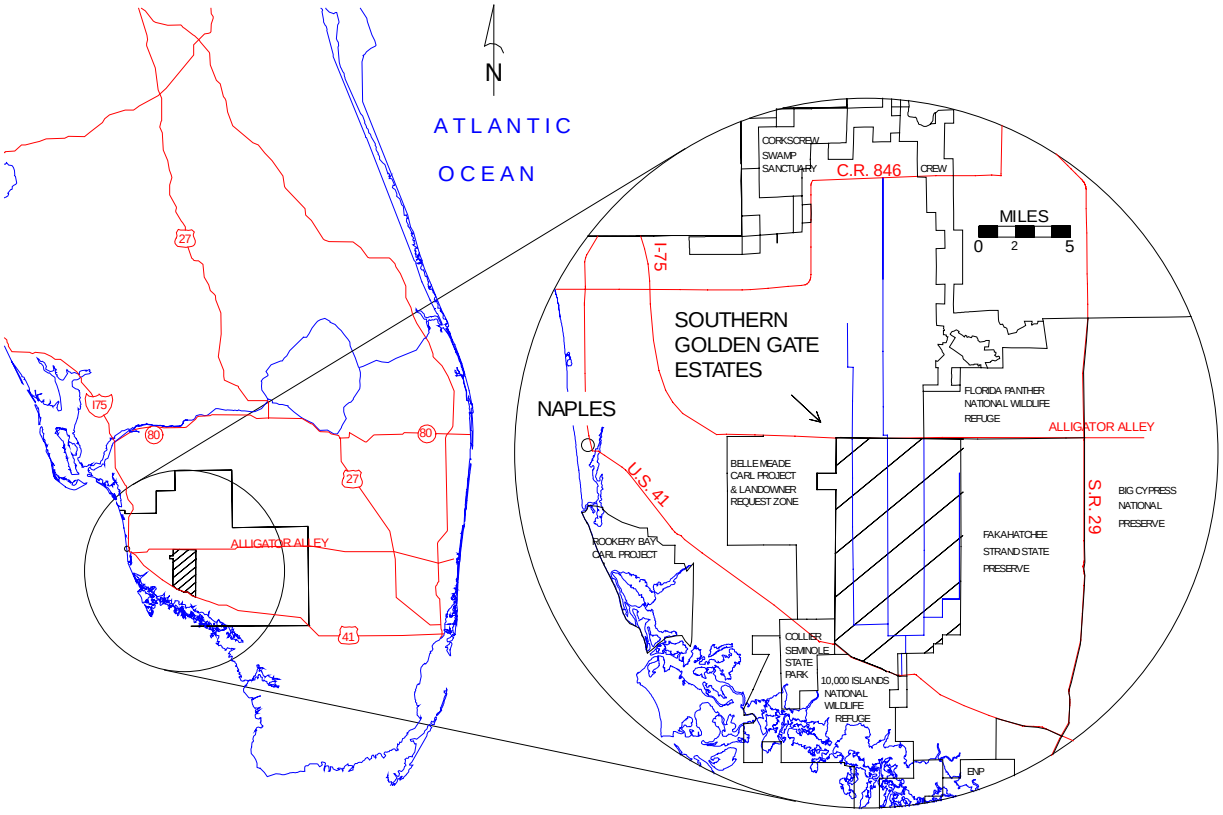
USACE	United States Army Corps of Engineers
AFB	Alternatives Formulation Briefing
BCB	Big Cypress Basin
BCOE	Biddability, Constructibility, Operability, and Environmental
BO	Biological Opinion
CAR	Coordination Act Report
CARL	Conservation and Recreation Lands
CEQ	Council on Environmental Quality
CERP	Comprehensive Everglades Restoration Plan
COE	Army Corps of Engineers
Corps	Army Corps of Engineers
CREW	Corkscrew Regional Ecosystem Watershed
CRGGE	Committee on the Restoration of Golden Gate Estates
CWA	Clean Water Act
DCT	Design Coordination Team
DEP	Department of Environmental Protection
DM	Design Memorandum
E&D	Engineering and Design
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FDOF	Florida Division of Forestry
FRC	Feasibility Review Conference
FWC	Florida Fish and Wildlife Conservation Commission
FWCA	Fish and Wildlife Coordination Act
FWCAR	Fish and Wildlife Coordination Act Report
FWS	Fish and Wildlife Service
GAC	Gulf American Corporation
GGE	Golden Gate Estates
GGESC	Golden Gate Estates Study Committee
GIS	Geographic Information System
H&H	Hydrology and Hydraulics
HMS	Hydrologic Modeling System
HSPF	Hydrologic Simulation Program-Fortran
HTRW	Hazardous, Toxic, and Radioactive Waste
ITR	Independent Technical Review
LERRD	Lands, Easements, Rights-of-way, Relocations, and Disposal
LWCWSP	Lower West Coast Water Supply Plan
MCACES	Micro Computer Aided Cost Engineering System
MPMP	Master Program Management Plan

NED	National Economic Development
NEPA	National Environmental Policy Act
NGGE	Northern Golden Gate Estates
NGP	Noticed General Permit
NOAA	U.S. National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	U.S. Natural Resources Conservation Service
O&M	Operations and Maintenance
OBS	Organization Breakdown Structure
OMRR&R	Operation, Maintenance, Rehabilitation, Repair, and Replacement
P&S	Plans and Specifications
PAL	Planning Aid Letter
PCA	Project Cooperation Agreement
PDT	Project Delivery Team
PE	Project Engineer
PED	Pre-construction, Engineering, and Design
PIR	Project Implementation Report
PMP	Project Management Plan
QCM	Quality Control Manager
QCP	Quality Control Plan
RECOVER	Restoration, Coordination, and Verification
RES	Real Estate Supplement
Restudy	Central and Southern Florida Project Comprehensive Review Study
ROD	Record of Decision
SAD	South Atlantic Division
SCS	Soil Conservation Service
SFWMD	South Florida Water Management District
SGGE	Southern Golden Gate Estates
SHPO	State Historic Preservation Officer
SOE	Save Our Everglades
TMDL	Total Maximum Daily Load
TRC	Technical Review Conference
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VE	Value Engineering
WQC	Water Quality Certification
WRDA	Water Resources Development Act

1. Project Information

1.1 Description

1.1.1 Study Area Description



Golden Gate Estates (GGE) began in the early 1960's within Collier County in Southwest Florida. Private interests planned to develop a 173 square mile (111,000 acre) residential subdivision. Today this development is split into two entities. Northern Golden Gate Estates (NGGE) which remains a residential subdivision, while the portion known as Southern Golden Gate Estates (SGGE) remains partially developed an is the subject of this environmental restoration Project Management Plan.

Southern Golden Gate Estates (SGGE) is an area of approximately 94 square mile (60,160 acre) located between Interstate 75 and US Highway 41. It is situated southwest of the Florida Panther National Wildlife Refuge, north of the Cape Romano-Ten Thousand Island Aquatic Preserve, east of the Belle Meade State Conservation and Recreation Lands Project Area, west of the Fakahatchee Strand State Preserve. It also encompasses the

Picayune Strand State Forest. Significant alterations to the area's hydrology and vegetative communities have occurred within the SGGE since the cypress logging operations in the 1940s and 1950s. Land drainage activities, begun in southwest Florida with the diversion and channelization of the Caloosahatchee River, accelerated in the Golden Gate Estates area during the 1920 to 1950 period (Tabb *et al.* 1976). The construction and completion of the Faka Union Canal System within the SGGE occurred between 1968 and 1971. Four canals totaling approximately 48 miles, were built within the SGGE as part of the proposed residential development project. The resulting hydrologic effects of these large canals are severe over-drainage of the area and large point source freshwater discharges to downstream estuarine systems. Adverse changes to vegetative communities have also been noted. The most severe changes within the drained areas are the invasion of exotic vegetative communities such as the cabbage palm (Sabal palmetto). It is estimated that the Golden Gate and Faka Union Canal systems have increased drainage by 16 times faster than historic conditions, lowered water tables by 2 to 4 feet, and reduced hydroperiod by 2 to 4 months, resulting in a dramatic increase in forest fires and annual runoff (Gore 1988). Water table depletion of more than four feet has also been observed in some areas. The over-drainage effects caused by the Faka Union Canal system and other canal systems within the Big Cypress Basin have been documented in more detail within several previous reports (Tabb et al. 1976, Carter et a1 1973, Corps 1980, Corps 1986, Gore 1988, etc.).

1.1.2 Comprehensive Everglades Restoration Plan

The Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the Central and Southern Florida Project Comprehensive Review Study was transmitted to Congress on July 1, 1999. The recommended Comprehensive Everglades Restoration Plan (CERP) is contained within the Integrated Feasibility Report. The Southern Golden Gate Estates (SGGE) Hydrologic Restoration Project is included in CERP as an "Other Project Element". CERP was authorized as part of the Water Resources Development Act (WRDA) of 2000 on December 11, 2000.

CERP is a framework for modifications and operational changes to the Central and Southern Florida Project that are needed to restore, preserve, and protect the South Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection. CERP will be implemented to ensure the protection of water quality in, the reduction of the loss of fresh water from, and the improvement of the environment of the South Florida ecosystem, and to achieve and maintain the benefits to the natural system and human environment described in the Comprehensive Plan.

1.1.3 Project Description

The following was taken from the Executive Summary of the Conceptual Plan, Final Report, Big Cypress Basin, South Florida Water Management District , February 1996:

"The Southern Golden Gate Estates (SGGE) study area encompasses an approximately 94 square-mile area of sensitive environmental landscape in southwestern Collier County, south of Interstate 75 (I-75) between the Fakahatchee Strand and Belle Meade watersheds. It is an important surface storage and aquifer recharge area with a unique ecology of cypress, wet prairie, pine, hardwood hammock, and swamp communities. It also includes three major flow-ways that contribute freshwater input to the Ten Thousand-Island Estuaries. Construction of road and drainage modifications in the 1960's and 1970's have over-drained the area resulting in reduction of aquifer storage, increased freshwater shock load discharges to the estuaries, invasion of upland vegetation and increased frequency of forest fires."

Concern over the gradual degradation of environmental quality and water supply potential of the region prompted the State of Florida to include the area as a component of the Save Our Everglades (SOE) program in 1985. Subsequently, the project was included in the State's Conservation and Recreation Lands (CARL) Acquisition program initiative for acquiring the entire project area under public ownership. In 1992, the Governor of Florida requested the South Florida Water Management District (SFWMD) to develop a conceptual hydrologic restoration plan for the SGGE to enhance the environmental value and water resources of the region. This study was initiated at this request to develop a detailed hydrologic restoration plan with the primary objectives of reducing over-drainage and restoring historic sheetflow patterns while maintaining the existing levels of flood protection for areas north of the project.

The Faka Union Canal Watershed that includes the SGGE and part of the Northern Golden Gate Estates (NGGE), drains an approximately 189 square-mile area through a network of 70 miles of four primary canals namely, the Miller, Faka Union, Merritt and Prairie Canals. The water levels in these canals are controlled by 12 water control structures. The topography is characterized by low relief and poorly defined drainage patterns with ground elevations ranging from 24 feet NGVD in the headwaters to 2 feet NGVD near the outlet of the basin. Presently approximately 185,000 acre-feet of freshwater are discharged annually from the Faka Union Canal to the Faka Union Bay estuary as point source flow.

A continuous process hydrologic-hydraulic simulation model of the watershed was developed using the United States Environmental Protection Agency's (EPA) watershed modeling program Hydrologic Simulation Program-Fortran (HSPF) to quantify the rainfall-runoff patterns and soil storage components of the watershed. The model was calibrated at

six locations in the basin. The watershed characteristics were simulated for a continuous 23-year period at a daily time step under existing and restoration plan development conditions.

Assessment of the simulated existing condition of the watershed indicates that the canals largely control the overall hydrology of the watershed discharging approximately 18 inches of runoff annually to the Faka Union Bay. The canals also intercept shallow groundwater outflow, and have continually lowered the water table. The generalized surficial groundwater flow directions vary seasonally. During the wet season when the groundwater levels are high, the flow patterns into the Faka Union Canal are in a south to southwesterly direction. As the dry season progresses, the groundwater movement shifts to an east-west direction, draining directly into one of the north-south canals. Construction of the canals has not only increased surface runoff, but has also increased the rate of groundwater outflow, causing seasonal groundwater outflow peaks that were not present before the canals were excavated.

Five alternative configurations of structural measures were developed and their performances at meeting the objectives of the project were evaluated by the simulation model. The alternative measures evaluated ranged from partial/incremental restoration to full-scale approach with spreader channels, swale and road removal, placement of canal blocks, and flood control pumpage from areas north of I-75. Alternative 3C with structural components of 2.4 miles of spreader channels, 83 canal plugs in four canals, partial removal and leveling of 130 miles of road and tramways, and installation of three pump stations with a total capacity of 890 Horsepower and a combined discharge capacity of 860 cfs, emergency backup generators and two portable pumps was found to be the optimum configuration of the recommended plan to achieve the desired objectives of the project. (Figure 1) In addition to implementing the structural/nonstructural elements of Alternative 3C, other recommendations include: maintenance of a travel corridor through the project area connecting Everglades Boulevard and Jane's Scenic Drive along the Faka Union Canal for fire management by the Division of Forestry and for recreational public access; collection of additional stream-flow data on the Miller, Faka Union and Merritt Canals at I-75; continuation and enhancement of the existing groundwater monitoring program in SGGE; determination of quantitative and qualitative success criteria for the project; maintenance of optimal stages in the flow-ways; implementation of the restoration with an interdisciplinary approach; use of a gradual and phased strategy for restoration implementation; and inclusion of the impacted areas outside of the project area into a CARL project boundary, either the Belle Meade or Save Our Everglades boundary. The estimated first cost of implementing the plan is $11,652,769 in 1995 dollars. A breakdown of the costs of the specific elements of the plan is shown below.

INITIAL PLAN C COSTS

A.	Spreader Channels	$ 1,092,371
B.	Canal Plugs	3,594,454
C.	Road and Tram Removal	3,365,778
D.	Pump Stations	2,060,240
E.	Other Site Work	20,000
F.	Contingency	1,519,926
	Total	$11,652,769

Part of the funding for the initial cost of the project may be absorbed by the in-kind services of the Florida Division of Forestry (FDOF) who currently manages the public lands within SGGE. Using FDOF's staff and equipment for the road and tram removal would reduce the first cost by $3,365,778. Stockpiling the fill at the plug locations would eliminate hauling costs and reduce the cost further by $905,700. The funding required for the remainder of the project is $7,381,291.

The implementation of this plan would result in restoration of the hydrology of 113 square miles, including parts of Fakahatchee Strand, to near pre-development (pre-1960's) conditions. The increased water storage (surface and groundwater) would cause increased evaporation and recharge, which would result in an overall reduction of six inches of annual runoff basin wide. Freshwater point flow discharges of the Faka Union Canal will be reduced from an annual average of 260 cfs to 2 cfs and will be replaced by distributed runoff along a six-mile wide front through U.S. 41 bridges. Average annual groundwater levels will be one foot higher over existing conditions and will provide for additional groundwater storage amounting to 25 billion gallons. Hydroperiod criteria for the upland vegetation would not be exceeded.

After nearly two decades of efforts by numerous organizations and individuals to devise a hydrologic restoration plan for SGGE, land acquisition is underway to implement the restoration measures for protecting the future water supplies and environmental resources of the region.

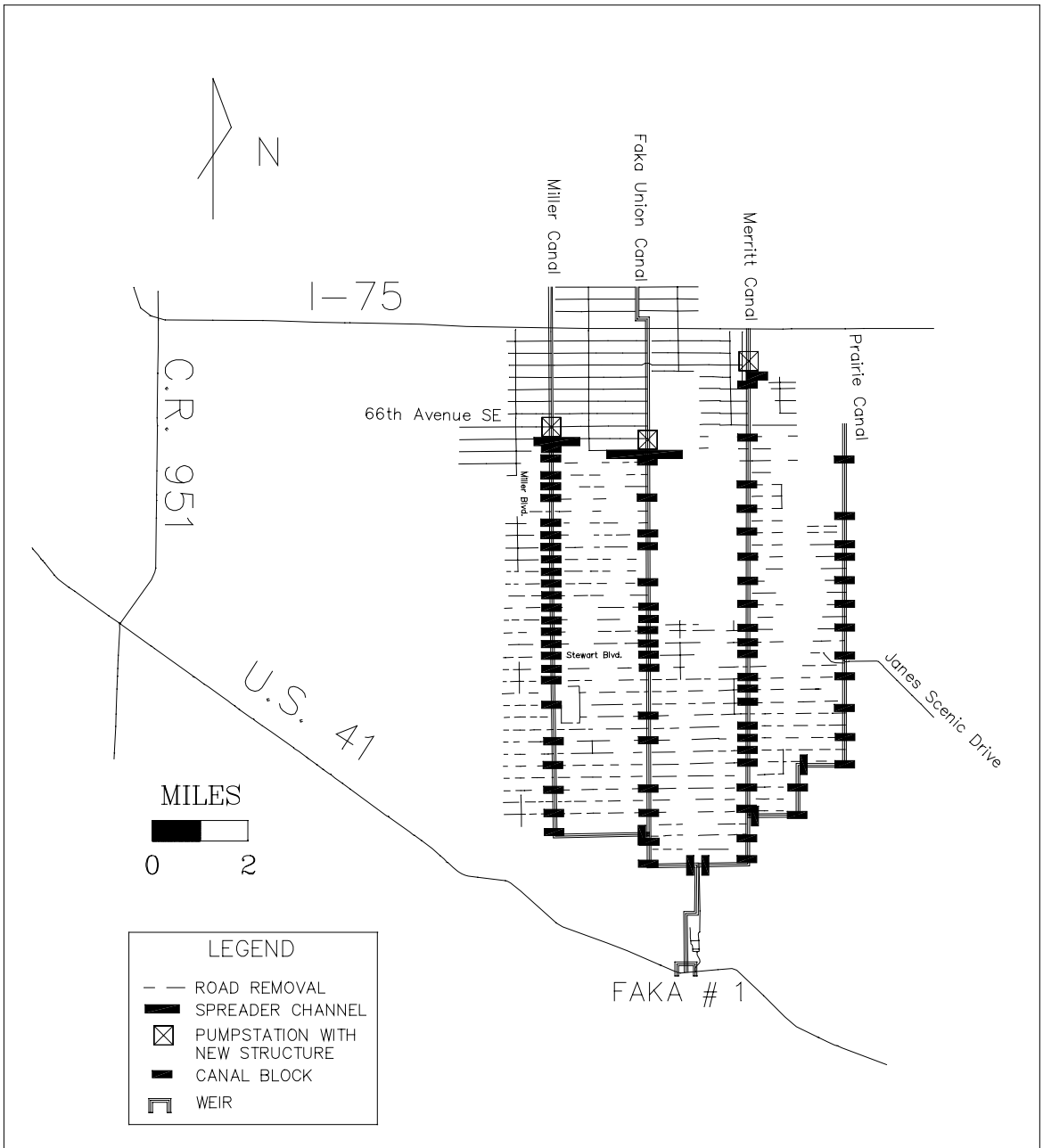


FIGURE 1. Recommended Plan Southern Golden Gate Estates Hydrologic Restoration

1.2 Project Authorities

The direction and guidance for the development of this Project Management Plan (PMP) are contained within the Master Program Management Plan (MPMP) for the Comprehensive Everglades Restoration Plan (CERP). The MPMP was developed and approved by the US Army Corps of Engineers (Corps) and the South Florida Water Management District (SFWMD). The purpose of the MPMP is to describe the framework and processes to be used by the Corps and SFWMD for managing and monitoring implementation of CERP.

1.2.1 Federal Authority

Section 601 of WRDA of 2000 authorized CERP and the following excerpt applies to the SGGE Project:

(d) AUTHORIZATION OF FUTURE PROJECTS-

(1) IN GENERAL- Except for a project authorized by subsection (b) or (c), any project included in the Plan shall require a specific authorization by Congress.

(2) SUBMISSION OF REPORT- Before seeking congressional authorization for a project under paragraph (1), the Secretary shall submit to Congress--

(A) a description of the project; and

(B) a project implementation report for the project prepared in accordance with subsections (f) and (h).

There is presently no federal authority to proceed into the Construction project phase. This authority will be obtained from a future WRDA. The SGGE Project Implementation Report (PIR) will be developed and submitted to Congress so that the project can be included in a WRDA 2002.

1.2.2 State Authority

During the 1999 legislative session, Florida lawmakers created Section 373.1501 of the Florida Statues and amended Section 373.026 of the Florida Statutes. Section 373.1501 of the Florida Statues provides a legislative finding that the Comprehensive Plan is important for restoring the Everglades ecosystem and for sustaining the environment, economy, and social well being of south Florida. Its purpose is to facilitate and support the Comprehensive Plan through an approval process concurrent with Federal government review and congressional authorization. Further, this section ensures that all project components are implemented through appropriate processes and are consistent with the balanced policies and purposes of Chapter 373 of the Florida Statutes, specifically Section 373.026. Section 373.026 (8)(b) directs the Florida Department of Environmental Protection to collaborate with the SFWMD and to approve each project component, with or without amendments, within a specified period.

In the 2000 legislative session, the Florida Legislature created an act relating to Everglades restoration and funding, amending Section 215.22 of the Florida Statutes and creating Section 373.470 which is cited as the "Everglades Restoration Investment Act." The purpose of this act is to establish a full and equal partnership between the state and the Federal governments for the implementation of the Comprehensive Plan. This act requires that a Project Implementation Report be approved in accordance with Section 373.026 of the Florida Statutes before the SFWMD and the Corps execute a Project Cooperation Agreement.

1.3 Background

1.3.1 Project Background

The SGGE portion of the Save Our Everglades CARL project is an important area for future surface storage and aquifer recharge that serves as the headwaters of the central portion of the Cape Romano-Ten Thousand Island Aquatic Preserve, part of the western Everglades. Construction of road and drainage modifications in the 1960's and 1970's have overdrained the area, allowing invasion of upland vegetation, wildfires, reduced aquifer storage, increased threat of salt water intrusion, and frequent freshwater shock loads to the estuary.

The project area was identified in 1985 as a component of the Governor of Florida's Save Our Everglades program. Various studies were conducted in the past to assess the feasibility of modifying the existing water control works to reduce and reverse the environmental and water resource impacts created by past overdrainage activities. The most recent of these is the U.S. Army Corps of Engineers (USACE) Feasibility study, completed in May 1986, in which the USACE performed a preliminary analysis of three conceptual plans. The USACE study concluded that there is no basis for Federal involvement in modifications of the existing water control system and that the report provides conceptual information which could be used by State and local interests in determining long term solutions to local water management and related resource management problems in the basin.

Subsequent to the USACE study the "Committee on the Restoration of Golden Gate Estates" (CRGGE) was established in 1987 by the Kissimmee River-Lake Okeechobee-Everglades Coordinating Council to keep the restoration of SGGE on the agenda of the State's important environmental projects. The committee recommended accelerated acquisition of the lands of SGGE in the State's CARL acquisition program. Under the auspices of the CARL program initiative, the Florida Department of Environmental Protection (formerly Florida Department of Natural Resources) is purchasing land in the project area for conservation and restoration. As of January 30, 2001, 42,231 acres of land have been acquired by the State. The CRGGE also recommended further evaluation of the USACE plan to develop an implementable physical restoration program. In 1992, Governor Chiles requested that the District develop a conceptual hydrologic restoration plan. See

Section 1.3.4, US Army Corps of Engineers' Involvement, for further project background information.

1.3.2 Historical Development of Golden Gate Estates

The Faka Union Canal system was excavated by the Gulf American Corporation (GAC) as part of a real estate development project called Golden Gate Estates (GGE). The extensive canal and roadway system was designed to allow year-round occupation of land that was once seasonally flooded for several months each year (USACE study, 1986). Construction of the southern canal system was begun in 1968 and completed by mid 1971. Since that time, the ecological balance that existed for hundreds of years has been severely altered and in some places, the existing landscape does not resemble the historic conditions at all. Construction of the canals has led to both increased volumes and rates of runoff from the watershed, which has had lasting effects on the area's water supply, vegetation, wildlife, and coastal estuaries.

The canals intercept large volumes of surface and subsurface flow and quickly divert them to the Faka Union Bay and the Cape Romano-Ten Thousand Island Aquatic Preserve of the Gulf of Mexico resulting in less surface water available for storage. Since groundwater recharge is achieved primarily through infiltration from surface detention storage, reduced groundwater recharge threatens both groundwater supply for the region and the natural barrier to salt water intrusion. Continued overdrainage has caused an eventual lowering of the groundwater table. This has caused vegetation to change from wetland dominant to transitional and upland systems with invasive exotic species. The extreme dry conditions caused by overdrainage have resulted in more frequent and more intense wildfires with a greater destructive impact on vegetation.

The increased runoff rate has had severe effects on the receiving estuaries. Historically, the estuaries would receive broad, slow moving sheets of water that were capable of carrying essential nutrients but not high sediment loads. This has been replaced with point loads of freshwater at the Faka Union Canal outlet that push salinity levels down and result in freshwater discharge shocks throughout the Cape Romano-Ten Thousand Island Aquatic Preserve. The increased runoff rate drains the area quickly and does not allow the hydroperiod necessary to sustain wetland vegetation. A study by Carter et al., 1973, indicated that approximately a one-foot drop in the water table reduces cypress productivity by 40 percent.

1.3.3 Prior Studies and Reports

A number of studies have been conducted over the past 20 years regarding the Golden Gate Estates Development and canal network. These studies have been reviewed and were referred to periodically as the project progressed for hydrological, biological, and ecological

information of the study area. All of these studies assumed some limited development in SGGE. A brief summary of some of the studies are described below.

One of the first studies conducted was "A Hydrologic Study of the GAC Canal Network" (1974) by Black, Crow, and Eidsness, Inc. for the Board of Collier County Commissioners. This study pointed out hydraulic deficiencies with the GAC canal network including how it has altered surface flow patterns yet is unable to convey even a 10-year flood. The study recommended improvements in the system with ways to lessen the environmental impacts of the canals but did not address wetland restoration issues to predevelopment conditions. The study did provide valuable information regarding the hydrology of the GGE and hydraulics of the canals.

Because most of GGE is owned privately, any significant change in its land use or hydrology would affect privately owned land. To address this legal issue the Golden Gate Estates Study Committee (GGESC), appointed by the Board of County Commissioners in 1975, hired Mr. Frank E. Maloney, Dean Emeritus and Professor of Law of the University of Florida to examine the legal issues associated with altering the water management system in GGE.

Based on Mr. Maloney's opinion, the GGESC proceeded with developing a restoration plan for SGGE. The GGESC released the "Golden Gate Estates Redevelopment Study" (1977) which is essentially made up of Dean Maloney's first report and one other. The second report called "An Ecological and Hydrological Assessment of the Golden Gate Estates Drainage Basin, with Recommendations for Future Land Use and Water Management Strategies," was written by Tropical BioIndustries, and contains geographical, hydrological, and biological information regarding the study area, some of which had been supplemented by more recent information. This study recommended a land use strategy for creating flowways that resemble the historic flow pattern and creating conservation areas (mostly in the southern portion of GGE) where urban development would not be allowed. This plan was further evaluated by the USACE.

It was soon realized by the GGESC that a proper permanent solution may take many years to implement because it would affect thousands of parcels of privately owned land and the major changes to the roads and canals would be very costly. An interim plan was developed by consulting engineers CH2M Hill called "Proposed Interim Modifications, Golden Gate Estates Canal System" (1978) for the Board of County Commissioners. This plan called for raising the crest elevations of several weirs by flashboards that would allow maintenance of canal water elevations at any desired level between existing elevations and ground level. It also recommended installing four earthen plugs to separate the Golden Gate Canal drainage basin from the Faka Union Canal drainage basin and thereby reduce runoff into the Naples Bay. The plugs would also reduce runoff into Faka Union Bay by diverting runoff to neighboring Fakahatchee Strand. All of the weir modifications outlined in the plan except the earthen plugs have been implemented. The potential legal issues of this plan were

addressed in a report called "Legal Ramifications of Implementation of the Interim Action Program in Golden Gate Estates, Collier County, Florida" (1979) by Dean Frank Maloney.

"Canal Discharge Impacts of Faka Union Bay", by John Wang and Joan Browder, evaluated the effects of the canal discharge on the Faka Union Bay's salinity using data analysis and numerical modeling. They concluded that the three inputs to the Bay (groundwater seepage, canal discharge, and rainfall) have a high interrelation, and depending on the location in the Bay, all three may be significant factors for determining salinities. They also concluded that groundwater levels might better represent actual discharge rates than the recorded canal discharges.

In the report, "Impacts of Surface Drainage on Groundwater Hydraulics" (Flora C. Wang, Allen R. Overman, 1981), the authors quantified the difference of surface and subsurface runoff before and after the construction of the canals. They concluded the canals have increased surface runoff by approximately 50 percent and caused a drawdown of the water table of approximately two feet at a distance of one mile from the canal.

In another report, "Impacts of Drainage Canals on Surface and Subsurface Hydrology of Adjacent Areas in South Florida" (1977), Flora C. Wang used a water balance model to show monthly balances of precipitation, evapotranspiration, soil moisture, and runoff. The report quantified the effects of the canal systems on the shallow aquifer and summarized this in a table showing estimated water table drawdown and its corresponding distance away from the canal.

A report by Environmental Science and Engineering, Inc., "Golden Gate Estates Groundwater and Septic Tank Investigation" (1979), summarized the results from soil and water quality samples withdrawn from 130 sites in Golden Gate Estates. This report contains a map of the major lithologic unit profiles in the study area.

"A Report on Acceptance and Flooding Golden Gate Estates" (1977) by Stanley W. Hole and Associates, identified several roads and canals to be accepted by Collier County and various canals were inspected and a general assessment of the flood conditions within the Estates were provided. This report provided some short term (1-2 months) data observations.

Engineering consultants Connell, Metcalf & Eddy published the report "A Hydraulic Study of the South Golden Gate Estates Canal Network, Collier County, FL" (1978). This hydrologic and hydraulic study used the Soil Conservation Service (SCS) method of determining runoff for the lower portion of the Estates and an event-based model (10-year, 5-day storm event). This report provides some information regarding soil type in the study area, however, more detailed soil information is currently available.

The report, done by the USACE titled "Golden Gate Estates Feasibility Report" (1986), evaluated three alternatives for modifying the canal network. This report was used as a primary reference for the SFWMD, Big Cypress Basin, "Hydrologic Restoration of

Southern Golden Gate Estates - Conceptual Plan" (Abbott and Nath, 1996) and the third restoration alternative presented in the report, which originated from the GGESC, was used as a primary reference for developing alternative restoration scenarios. The USACE Feasibility Report used an event-based model to predict flood hydrographs and the extent of floodplains. The report from the USACE was preceded by a Reconnaissance Report in 1980.

Another study used as a data source includes "The Big Cypress National Preserve" (Michael J. Duever et al., 1986) which provides valuable information about the regional wetland ecosystems and, in particular, hydroperiod regimes of wetlands.

1.3.4 US Army Corps of Engineers' Involvement

Authorization of a Golden Gate Estates Feasibility Study was initiated by the Corps of Engineers (Corps) in 1978 to consider various alternatives to water resource problems resulting from the extensive canal systems of Golden Gate Estates. A Reconnaissance Report for Golden Gate Estates was issued by the Corps in 1980 (Corps 1980). In 1986, the Corps released a Golden Gate Estates Feasibility Report (Corps 1986). At that time, the Corps recommended no Federal involvement for implementation of modifications to the Faka Union Basin portion of the Golden Gate Estates water control system. In February 1992, Governor Lawton Chiles issued a directive to the South Florida Water Management District (SFWMD) to "...develop a conceptual hydrologic restoration plan for Southern Golden. Gate Estates, using the Corps' Feasibility Report as a primary reference". In February 1996, the SFWMD, Big Cypress Basin completed the "Hydrologic Restoration of Southern Golden Gate Estates - Conceptual Plan" (Abbott and Nath 1996).

The Water Resources Development Act (WRDA) of 1996 (P.L. 104-303) authorized the Secretary of the Army, in cooperation with a non-Federal project sponsor and the South Florida Ecosystem Restoration Task Force, to provide the determination as to whether a nominated critical restoration project for the south Florida ecosystem will produce independent, immediate, and substantial; restoration; preservation, and protection benefits. The SGGE Hydrologic Restoration Project was ranked seventh on the critical restoration project list by the South Florida Ecosystem Restoration Working Group. A critical project letter report was submitted by the Corps' Jacksonville Planning Division and approved by Corps Headquarters. The identified SGGE restoration project has since been removed from the WRDA of 1996 critical project funding authorization by the Corps since the Corps has determined that the land costs must be included in the total project cost which brings the total project cost to above the $50 million limit for Critical Projects. The Corps has included the SGGE restoration project in the overall Central and Southern Florida Project Comprehensive Review Study (Restudy) (Corps 1999), that may provide an alternative authorization and funding authority for implementation of the SGGE restoration project.

1.3.5 Project Land Acquisition

The implementation of the project is entirely contingent upon acquisition of lands. The Department of the Interior and the Florida Department of Environmental Protection (FDEP) executed a grant agreement under the Farm Bill (Section 390 of the Federal Agriculture Improvement and Reform Act of 1996, Public Law 104-127). This grant provided FDEP $25 million in Federal funds to acquire approximately 20,250 acres in the SGGE. That grant received on April 17, 1998 has been amended and the total federal funding is now $38 million. To date nearly $24 million has been expended and the balance must be expended before December 31, 2003, the grant expiration date. The framework agreement requires that all Farm Bill Funds spent on acquisition will be matched by non-Federal funds on a dollar by dollar basis. To date nearly $29 million non-Federal funds have been expended by FDEP.

The FB3 Grant Agreement developed with FDEP provides that conservation lands acquired under the agreement will be used and managed for conservation purposes within the scope of authorities of the Farm Bill and the FWCA. To date, nearly 45,000 acres of targeted lands have been purchased within the SGGE. Land acquisition negotiations within the SGGE are continuing under the direction of FDEP with the remaining landowners. On January 12, 2001, the Department of the Interior approved amendment to the grant to allow the use of eminent domain to acquire remaining parcels that cannot be acquired by voluntary means.

In an effort to implement the CERP, the Big Cypress Basis Board advised FDEP that the hydrologic restoration was scheduled to commence as early as October 2002, and 100 percent public ownership would be required. After multiple rounds of appraisals and offers to SGGE landowners over the last fifteen years, there remain nearly 4,000 parcels in SGGE. Due to the relatively large number of remaining parcels, a plan was developed by FDEP to increase the percentage of parcels acquired by voluntary means while assuring that all lands are acquired by October 2002. The first step taken by FDEP was to seek authority from the Board of Trustees to offer amounts in excess of the appraised value in an effort to acquire as much property as possible without having to resort to the use of eminent domain. On July 11, 2000, the Board of Trustees authorized the Director of DSL, or her designee, to extend bona fide offers and to approve any contract for the sale and purchase of land in excess of DSL approved values, pursuant to the terms and specific guidelines contained in such authorization.

In anticipation that a substantial portion of the remaining parcels will still require the use of eminent domain to assure that all lands are in public ownership by the time the restoration is to begin, preliminary meetings have been held by the Chief Judge in Collier County. Current projections are that it may take nearly two years to process the parcels that cannot be acquired voluntarily through the court system of Collier County. To assure a constant flow of parcels to the Office of the Attorney General, the plan contemplates the processing of parcels in multiple phases over the

next 18 months. Given the accelerated negotiation efforts to comply with the CERP plan, FDEP anticipates 100 percent ownership of the remaining 11,144 acres by its commencing date of October 2002.

1.3.6 Public Land Management

Lands will be managed pursuant to an OMRR&R manual developed by the USACE and SFWMD that will ensure the receipt of project benefits and the Department of Agriculture and Consumer Services Division of Forestry will have substantial input into the manual. See Appendix BB, Picayune Strand State Forest Five Year Management Plan, which includes the following sub plans: Fire Management, Recreation, Vegetation Management, and post restoration road plan. This plan is current through May of 2001. A new plan is being drafted at this time for the next five-year period. Multiple use management will include ecosystem restoration, prescribed burning, wildfire control, exotic speciescontrol, and recreation including: fishing, camping, hiking, hang gliding and horse back riding.

1.4 Related Projects

The Southern Golden Gate Estates area hydrologically and ecologically constitutes a major component of the complex Big Cypress Basin (BCB) Watershed. The contiguous ecosystems of the Big Cypress Preserve, Everglades National Park, Cape Romano-Ten Thousand Island Aquatic Preserve , Fakahatchee Strand State Preserve, and National Audubon Society Corkscrew Swamp Sanctuary are nestled in a unique, sensitive environmental corridor of diverse flora and fauna. Historic flowways in the region were along the natural drainage features emanating from the Immokalee highlands through a series of strands, sloughs and more broadly as surface sheetflows to the tidal passes of the Gulf of Mexico. These natural features consisted of a series of flat wetlands or swamps connected by shallow drainage ways or sloughs, and are divided by low ridges that are dry for a portion of the year, and overtopped by water in periods of seasonal high rainfall. Characteristic of natural strands, the historic water flows were extremely slow and penetrating due to vegetation and physical geography. Hydroperiods were extended well into the winter/spring dry season.

However, as land areas began to be developed, the typical "ditch and drain" development resulted in a series of canals and numerous roads that tended to overdrain the water table and drastically alter the flow patterns of the natural drainage basins. Such combinations of development events have greatly reduced the areas of functional wetlands, lowered groundwater levels, reduced aquifer recharge, and contributed to concentrating the flow of stormwater runoff instead of allowing the traditional sheetflow across the land. With the change in flow, characteristics came the associated environmental impacts on the overall ecology of the uplands, wetlands and the estuaries of the region, resulting in a change in the entire landscape.

Since 1977, the Big Cypress Basin Board of the South Florida Water Management District has undertaken an aggressive program to inventory and evaluate the resources and problems of this complex watershed, developed water management plans for individual basin elements, and carried out capital project construction to mitigate problems of flood control, water supply, water quality, and environmental enhancement for a rapidly urbanizing population. However, none of the earlier studies looked at a composite plan treating the historic western Collier watershed as an interrelated single unit. Recognizing that much of today's water management problems have emerged from disruption of the historic flowways, it is expected that many such problems and impacts can be minimized by trying to reassemble these historic surface water flow characteristics to an extent reasonably possible.

An on-going project known as the Big Cypress Basin Watershed Management Plan has developed a comprehensive hydrologic-hydraulic model of the entire western BCB hydrologic region and its associated canal network as a single interrelated unit as a tool for evaluating alternative water management strategies. The primary objective of this study is to develop a guide map for future capital project construction and operation of the water management facilities in the BCB to achieve the following goals:

- Maintain or improve where consistent with the purposes of the plan levels of flood protection in the developed and developing areas consistent with Collier County Comprehensive Plan
- Restore historic surface water flow characteristics on conservation and public lands
- Improve water retention and aquifer recharge potential
- Reduce threats of saltwater intrusion
- Reduce harmful freshwater discharge impacts on downstream estuaries
- Provide basis for off-site mitigation opportunities
- Enhance natural system functions and values on publicly owned and conservation lands.

The thrust of the alternatives will concentrate on restoring the predevelopment flowways or their equivalent, specifically rerouting flows from the 'historic high' regions of the north, like the Corkscrew Regional Ecosystem Watershed, to the southern portions of the region, namely the Fakahatchee and Belle Meade, including the Southern Golden Gate Estates. The essential assumption in developing such alternatives is that the lands in the above referenced systems are eventually expected to be in public ownership. Some of the alternative elements to be considered in formulating plans for restoration of the historic flowways, but not limited to are:

- Modification of all of the Golden Gate Main and Faka Union Canal Structures in Big Corkscrew Island.
- Extend the CREW project boundary to include some environmentally sensitive units of Northeast Golden Gate Estates for provision of additional storage for flood protection and aquifer recharge and management within the Bird Rookery system.
- Completion of the Cocohatchee Canal structures and channel modifications.

- Modification of CR 951 Canal south of CR 846 with water level control structures.
- Routing of Corkscrew Canal and Curry Canal flows east of Cypress Canal Weir 4A-1 towards Miller Canal.
- Improvement of the C1-Connector Canal to move wet season flow toward south of I-75 and dry season return flows north for wellfield recharge.
- Improvement of Miller Canal Weir No. 3 and its entire reach north of I-75.
- Provision of pump stations on Miller, Faka Union, and Merritt Canals south of I-75 with spreader channels as proposed under the SGGE Restoration Plan.
- Incorporate elements of the Tamiami Trail Flow Enhancement critical restoration project to augment sheetflow from the headwaters to the Ten Thousand Islands Estuary.

Many of the above elements of the BCB Watershed Management Plan will potentially support the functioning of the SGGE restoration plan.

1.5 Differences from the Comprehensive Plan

There are no differences between the project described in Section 1.1.3 Project Description, and the project as it was described in the Comprehensive Everglades Restoration Plan.

2. Project Scope

2.1 Planning Issues

The rapid growth of southwest Florida, plus Collier County in particular, during the past two decades, with increased population and accompanying urban development, has stimulated significant concerns regarding the water and environmental resources of the region. A myriad of issues relating to water supply, flood protection, water quality, and natural ecosystems have emerged from poorly planned urban developments in sensitive environmental settings like SGGE. The documented evidence that several hundred miles of bulldozed limerock roads and dredged canals have adversely impacted five major hardwood strands, two primary freshwater aquifers, three major hydrologic flowways and numerous habitats speaks of the problems brought forth by the development of SGGE. A summary of the issues pertinent to water supply, natural ecosystems, flood control, and water quality specific to this project is presented below.

2.1.1 Water Supply

The major freshwater aquifers underlying the SGGE region are the Water Table, Lower Tamiami, and Sandstone Aquifers. The Water Table and Lower Tamiami Aquifers are the primary sources of water supply and occur within the Surficial Aquifer system. The Sandstone Aquifer, a part of the intermediate aquifer system, is separated from the surficial system by low permeability sediments and only present on the northern part of the watershed.

The primary sources of recharge to the surficial aquifer system is rainfall. Downward movement of water through the leaky confining beds underlying the water table recharges the Lower Tamiami Aquifer. Since most of the SGGE canals are located in areas where the limestone of the shallow aquifer is within ten feet of the land surface, there is a direct hydraulic connection between the canal system and the upper portions of the Surficial Aquifer. Thus, rapid rate of runoff provided by the canals is a prime cause of depletion of groundwater storage. The overdrainage by canals have caused general drawdown of approximately two feet, at a distance of one mile from the canals in the Faka Union Canal watershed (Wang and Overman, 1981).

The City of Naples Eastern Golden Gate Wellfield is located along the Faka Union Canal between weirs Faka Union No. 4 and Faka Union No. 5. With a maximum daily allocation of 21.0 million gallons per day, this wellfield provides the lion's share of the potable water for the City and its unincorporated service area. Recharge from the canal does influence the yield of the wellfield. Other wellfield permits in SGGE, which are under review by SFWMD, will be taken into account in the PIR phase of the project. Protection of the long-term sustained yield the wellfield is one of the primary water supply related issues for the restoration of SGGE.

2.1.2 Flood Control

Continued maintenance, and possibly enhancement, of the existing level of service for flood control provided by the Golden Gate and Faka Union Canal system is of prime concern to the residents of GGE. In spite of a very aggressive canal maintenance program undertaken by the Big Cypress Basin, the rapid urban growth and subsequent encroachment into the low-lying natural storage areas have resulted in occasional flooding in historic lowlands in some locations in NGGE. The desired stormwater management level of service identified for the Estates area by Collier County is protection against a 10-year recurrence interval flood, while for the urban corridor (areas west of a line one mile east of CR 951) it is for a 25-year flood.

This plan addresses the concerns that hydrologic restoration of SGGE involving modification of the existing canals and water control structures may imperil flood control of the rapidly urbanizing NGGE area. This SGGE restoration plan incorporates appropriate means of maintaining, and where practical, enhancing the flood control functions of the NGGE and consistent with the restoration of the natural system. However, existing wetlands in NGGE will not be adversely impacted by the pumping proposed in the SGGE plan.

2.1.3 Natural Ecosystems Management

A unique combination of ecosystem dominates the landscape of SGGE with a vast extent of wet prairies, pine and cabbage palm flatwoods, hardwood hammocks, and tidal marshes. The sloughs, strands and wet prairies carry the freshwater surface flow to the Cape

Romano-Ten Thousand Island Aquatic Preserve, one of the largest mangrove systems in Florida. As explained elsewhere in this report, the large-scale development of SGGE with canals and roads caused in the overdraining of the pristine forested and emergent wetlands, and degraded the productivity of the wetland system due to shortened hydroperiods. In addition, invasion of exotic plants like Melaleuca and Brazilian pepper is beginning to pose problems to the native ecosystem and habitat. Since the hydrology of an area is the basis for structuring the type of plant and animal community that will exist, changes to the hydrology can cause a reorganization of the plant and animal community structure. For SGGE, the protection, and management of the sensitive environmental resources is to be achieved by public acquisition and restoration of the affected lands as outlined in numerous plans proposed over a two-decade period. Statutory changes to the Areas of Critical State Concern Program in 1993 proposed designating certain areas of Collier County as the Big Cypress Areas of Critical State Concern, and recommended: "The acquisition of Save Our Everglades CARL projects needs to be completed. The SFWMD's Big Cypress Basin Board should continue to provide funding to FDEP for staff dedicated to the acquisition of the Southern Golden Gate Estates portion of the Save Our Everglades project. The Land Selection Advisory Council should elevate the priority rankings of these projects to demonstrate the importance of these projects to the protection of the natural resources within the Big Cypress Area of Critical State Concern. The Board of Trustees should support the FDEP in using eminent domain to acquire these two CARL projects if voluntary negotiations are not successful." (District Water Management Plan; South Florida Water Management District, 1995)

2.1.4 Water Quality

Good quality of water is essential to all forms of life. In as far as the physical and chemical conditions of surface waters in the Class III freshwater bodies (recreation, fish and wildlife propagation) of the SGGE area are concerned, they generally meet the acceptable state standards. The quality of groundwater is also within the FDEP's drinking water standard for potable supply. However, at issue are the quality and routing of the receiving waters of the Faka Union Bay and the Cape Romano-Ten Thousand Island Aquatic Preserve, where enormous volumes of freshwater outflow from the Faka Union Canal System create abnormal salinity levels throughout the year.

The discharge from the Faka Union Canal varies seasonally with a large amplitude. This results in large fluctuations in the salinity levels and current patterns with enormous shocks to the aquatic biota of the Faka Union Bay, and often, too little freshwater input to the surrounding saline areas. The rapid decline in the salinity to near freshwater conditions has caused prolonged salinity stresses and has eliminated or displaced a high proportion of the benthic, midwater, and fish plankton communities from the Bay. Such suppressed plankton development has resulted in very low relative abundance of midwater fish and considerable drop in shellfish harvest levels. Seagrass meadows are no longer a prevalent habitat type in

the Bay. Instead, bare, sandy mud and algal areas predominate. The impact on commercial and recreational fisheries has been very significant.

2.1.5 Endangered and Threatened Species

The SGGE site is an important home to various State and federally listed species. The Florida panther, wood stork, manatee, and other species will benefit from the hydrologic restoration, elimination of most roads, and reduction in human presence that will result from implementation of this project.

2.2 Project Goals and Objectives

The present study is instituted to develop a detailed hydrologic restoration plan of SGGE that would achieve the following objectives:

- Reestablish historic flowways, sheetflow, and hydroperiods of wetlands to near historic levels
- Reduce point discharges to improve the health and productivity of downstream estuaries
- Maintain flood protection for developed areas north of the project
- Improve aquifer recharge for water supply and a salt water intrusion barrier
- Restore and enhance habitat for fish and wildlife resources including listed species such as the Florida panther, Florida black bear and wood stork, as well as rare habitat such as tropical hammocks and plant species including orchids and bromeliads
- Preserve upland habitat
- Control invasive exotic plants
- Improve water quality of stormwater runoff
- Reduce or eliminate overdrainage of adjacent, sensitive ecosystems
- Provide resource based recreational opportunities
- Provide contiguous habitat conservation for the greater Everglades ecosystem including the Florida Panther National Wildlife Refuge, Fakahatchee Strand State Preserve, Ten Thousand Islands National Wildlife Refuge, Collier Seminole State Park and the Belle Meade CARL area.

3. Work Breakdown Structure

The Work Breakdown Structure (WBS) displays the project in a product-oriented hierarchy of levels; each parent level being the summation of its subproject tasks. A product at any level is made up of those products listed in the hierarchical lower levels. All project activities will be identified in Appendix B of this Project Management Plan. Three major parts of the WBS are broken into phases below summarizing the products and activities needed.

Project Implementation Report Phase - The purpose of the Project Implementation Report is to affirm the evaluated restoration alternative recommended in the " Hydrologic Restoration of Southern Golden Gate Estates, Conceptual Plan", dated February 1996. The recommended plan must be shown preferable to taking no action or implementing any of the other alternatives considered in the Conceptual Plan. The plan must reasonably maximize ecosystem restoration benefits compared to costs, consistent with the project objective. The selected plan must be shown to be cost effective and justified to achieve the desired level of output. This Phase involves gathering the necessary information and survey data and completing the hydrologic modeling to prepare design plans for the Project. It includes the following elements for the restoration and construction:

- Planning Studies
  - Documenting the Planning Process
- National Environmental Policy Act Documentation
  - Impact Assessment
  - Biological Surveys and Mapping
  - Fish, Wildlife, and Vegetative Studies
- Economic Analysis
- Engineering and Design
  - -Hydrology and Hydraulics Studies
  - -Surveying and Mapping
  - -Geotechnical Studies
  - -Environmental Studies
  - -Civil Studies
  - -Cost Estimates
- Real Estate

Pre-Construction Engineering and Design Phase - The purpose of the PED phase is to finalize the detailed engineering and design to ready the project for construction, including the preparation of plans and specifications for the first significant construction contract. This phase begins with the Division Engineer's Public Notice, followed by the execution of a PED Agreement between the Corps and the non-Federal sponsor, SFWMD. It ends with the completion of the first set of construction plans and specifications for the project. During this phase, Design Memoranda documenting the technical work performed and draft Project Cooperation Agreements (PCA) will be prepared. SFWMD will obtain all lands, easements, rights-of-way, and relocations necessary for the construction work. This Phase involves finalizing the design, preparing the plans and specifications, and preparing the construction contracts for advertising.

- Preparation of Plans & Specification.
- Independent Government Estimate
- Value Engineering
- Relocations
- FWS and EPA plan design approval

- SFWMD Work Plan Approval
- Engineering Considerations and instructions for field personnel
- Independent Technical Review

Construction Phase - The construction phase for each project begins after congressional authorization, execution of the PCA for that project, acquisition of all LERRDs, and availability of Federal and non-Federal sponsor funds to perform the work. Construction of functional portions to be built by the Corps and will begin after receiving a written request from the SFWMD to perform that work. Construction by the Corps will begin after completion of reviews of contract solicitations and plans and specifications both internally and with SFWMD, subject to the availability of adequate Federal and non-Federal construction funds.

- Construction Contract
- Construction Management
- Construction Monitoring

Agency Responsibility: United States Corps of Engineers (USACE)

The USACE will take primary agency-level responsibility for the following tasks in implementation of the Southern Golden Gate Estates (SGGE) Hydrologic Restoration Plan. However, all efforts will be in partnership with South Florida Water Management District.

- Project Management Plan and Project Implementation Report Development
- Project Design
- Construction

Project Management Plan and Project Implementation Report Development

The selected alternative developed in the conceptual plan, "Hydrologic Restoration of Southern Golden Gate Estates" (1996) was primarily developed by the Big Cypress Basin of the South Florida Water Management District. To provide an objective look at the alternatives presented in the conceptual plan the Corp of Engineers will be the main effort on this task.

Project Design - The Corp of Engineers has the internal design resources necessary to prepare the design of the project. An internal effort will ensure continuity from the PIR phase and all life cycle phases from conception studies through plans and specifications.

Construction - The Corps of Engineers having taken the primary role in design phase and in order to avoid interruption of the on-going efforts, the Corps of Engineers should continue the lead role on this task. Providing continuity from design into construction.

Agency Responsibility: South Florida Water Management District (SFWMD)

The SFWMD will take primary agency-level responsibility for the following tasks in implementation of the Southern Golden Gate Estates (SGGE) Hydrologic Restoration Plan:

- Land acquisition in coordination with the Florida Department of Environmental Protection (FDEP).
- Hydrologic-Hydraulic (H&H) modeling in formulating the recommended plan.
- Operation and maintenance of the project which includes all requisite permits for operation.

Land Acquisition - As stated in Section 3.2.5, the implementation of the hydrologic restoration plan is entirely dependent upon acquisition of the project lands under public ownership. The Water Management District (WMD) has taken an active role since the initiation of the land acquisition program, under the State's Conservation and Recreational Land (CARL) program. To facilitate the acquisition program, the WMD has been providing funds for personnel support of two land acquisition agent positions since 1990. Considerable progress in land acquisition has been made. Approximately 25 percent of the land remains to be acquired. Recent authorization by the Florida Cabinet to offer 125 percent of appraised land value, and to pursue eminent domain proceedings for the lands east of Patterson Boulevard, will help accelerate acquisition of the remaining lands. Since the WMD has been coordinating the effort, it is suggested that it continue to take the primary role in this task.

Hydrologic-Hydraulic Modeling - The WMD has conducted the earlier phases of H&H modeling of the Golden Gate Watershed in formulating the conceptual plan. The simulation features have since been enhanced by the application of surface and groundwater integrated modeling. In order to avoid interruption of the on-going efforts, the WMD should continue the lead role on this task. However, the modeling of the project impact analysis, particularly the flood protection aspects of the Northern Golden Gate Estates (NGGE), will be assisted by the Corps of Engineers (USACE). The flood hydraulic analysis model formulated by the WMD will be furnished to the USACE for verifying the effectiveness of the recommended plan in meeting the desired objectives of flood protection.

Operations and Maintenance (O&M) - The present operation of 48 miles of primary canals and eight water control structures in the project, including the control of aquatic weeds in the canals, is performed by the SFWMD. Appendix T has stipulated that all of the interim operations and post-construction O&M functions will be performed by the SFWMD. However, the primary responsibility of developing the O&M manuals for water control facilities, pumps, and appurtenant features will be with the USACE, who will assemble the manuals, and upon completion of operational testing, will transfer them to WMD.

4. Organization Breakdown Structure

The Organizational Breakdown Structure for the USACE is attached at Appendix C.

5. Change Control Procedures

A Project Management Plan is a living document that will be updated or revised, as necessary, throughout the life of the project. Updates are defined as changes to the Project Management Plan that occur on a regular basis and do not substantially modify the schedule, cost, or annual work plan for the project. Updates may result from posting of actual data, corrections to erroneous information, or the addition of new data identified by the project managers. Updates may be made by project managers at any time and presented at each organization's regularly scheduled reporting or status briefing (e.g. Basin Board meetings or Corps Project Review meetings). Project Management Plan revisions are defined as changes that reflect significant changes in the project scope, schedule, cost, and/or annual work plan. Project Management Plan revisions may be scheduled or unscheduled depending on the nature of the change and/or the occurrence of a significant event/milestone or phase of project development. Revisions to the Project Management Plan will require formal approval by the Corps and SFWMD and will be accomplished through the DCT.

The Project Management Plan will serve as the baseline for the identification and tracking of changes in project scope, schedule and cost. Progress will be monitored through the use of performance reports with the goal of identifying changes as soon as possible and forecasting new schedules and/or costs. If changes in scope are identified, the Corps' Engineer Regulation 5-7-11 or other applicable rules and regulations will be utilized as the method to document and seek approval for the change.

6. Project Schedule

The schedule can be found in Appendix D. The schedule corresponds to the levels of the Work Breakdown Structure and identifies milestones. Additional levels of the schedules shall be developed as required and shall all be compatible with each other, the project summary schedule, ands the WBS.

7. Project Cost Estimating

This account includes all the design and cost estimates needed to support formulation of alternative plans and the plan recommended for authorization.

Preliminary design and cost estimates for screening plan components will be prepared to support plan formulation and optimization of the plan components. The preliminary design and cost analysis will include estimates of construction, average annual operation, maintenance and replacement, engineering, design, supervision, and administration costs. After the preliminary assessment of alternative plans has been completed, the plans will be screened to select those alternatives that warrant further study. As designs are refined, modified, and updated, cost figures will be supplied to selectively eliminate alternatives. A cost estimate will be prepared

for the recommended plan, and a locally preferred plan, if different from the recommended plan, using the Micro Computer Aided Cost Engineering System (MCACES). The cost estimate will contain sufficient detail to incorporate the requirements of *ER 1110-2-1302, Civil Works Cost Engineering*. Summary sheets from the MCACES cost estimates will be included as part of a separate engineering appendix to the PIR. Costs attributable to work in this account include the effort required to prepare input for the preliminary draft, draft, and final PIR, as well as participation in any required review conferences and resolution of comments resulting from the conferences.

Engineering Design for Preliminary Assessment of Alternatives - Preliminary civil design for formulating, scoping, and qualitative assessment of alternative plans will include site layout, identification of project features, typical cross sections, profiles, and location of facilities/utilities. Alternate combinations of types of construction and alignments will be screened to ensure optimum plans are identified.

Screening Level Cost Estimates - Cost engineering will assist in the selection of the components of the plans that will be considered during the preliminary assessment of plan alternatives. Cost information already compiled during the reconnaissance phase of study will be used to provide cost data for possible variations of the alternatives considered during the feasibility phase. MCACES cost estimates will not be required for the preliminary assessment of plan alternatives.

Engineering Design Final Alternatives - After the preliminary assessment of plan alternatives is completed and during the time leading up to the selection of plans for further study, information on additional components, as the individual project plans are refined, will be required input for engineering design and cost estimation refinement. This will be necessary for the final plan alternatives to be accomplished.

Preliminary Cost Estimates for Final Alternatives - After the preliminary assessment of plan alternatives is completed and during the time leading up to the tentative selection of a plan, modified and updated cost figures will be supplied as the individual project plans are refined in order to eliminate alternatives. The cost estimates will be based on quantities, which will be provided as a result of engineering design efforts for both construction and operation, maintenance, rehabilitation, repair and replacement (OMRR&R) items.

Finalize Design for Recommended Plan - After final alternative screening is complete, the designs for the recommended plan and a locally preferred plan (if different from the recommended plan), will be completed. This effort will include developing the drawings, deriving quantities, and identifying operation and maintenance costs.

Civil Design Write-Up for Preliminary Draft PIR - This activity includes preparation of the narrative report which documents all work leading up to submission of the preliminary draft PIR and input into the draft Project Management Plan.

Cost Estimating Write-Up - This activity includes the effort to prepare a narrative summary and the associated cost tables, documenting all the work performed leading up to submission of the preliminary draft PIR.

MCACES Cost Estimate - This work involves preparing the initial MCACES cost estimate for the recommended plan and the locally preferred plan, if different from the recommended plan. A detailed MCACES cost estimate will be prepared for the selected plan(s). The cost estimate will include detailed cost evaluations of the requirements for construction and OMRR&R activities. The cost estimate will be accompanied by a cost estimate summary describing major design features and important assumptions made in putting together the MCACES cost estimate.

Design and Cost Estimating Participation in the Alternative Formulation Briefing (AFB)- This activity includes preparation of work appropriate for presentation and participation in the AFB.

Finalize MCACES Cost Estimate - Provide detailed cost figures for refinement and/or changes in the final project design before the final report. Included will be a detailed evaluation of the requirements for OMRR&R activities. These will be incorporated into the final MCACES cost estimate for the selected plan. Also included is the effort required to modify the report write-up and the appropriate cost tables, if necessary, before submission of the final PIR.

Comment Responses & Finalize Write-Up - This task includes the effort required to address all comments generated at the AFB by revising drawings and the report write-up as well as documenting the comments and resolutions in the Project Guidance Memorandum.

During the plan formulation process of identifying alternative measures to be evaluated in the preliminary assessment of plans, and in actually performing the screening of alternatives to select plans that warrant further study, the South Florida Water Management District (SFWMD) will need to work closely with the Corps. SFWMD will review draft designs and provide comments. SFWMD's responsibility in this area will continue throughout the study as more features are formulated and designs developed. SFWMD will provide input to the Corps regarding operation and maintenance costs for the alternatives. SFWMD will also assist in the process of locating existing utilities in the project area.

8. Funding Requirements

The Project is funded through a 50/50 cost share arrangement between the SFWMD and the USACE as outlined in the Design Agreement. The current estimated construction cost, including remaining data collection and H&H analysis, of the project is $137,305,152. The sponsor will be seeking to maximize in-kind credit for this project through participation with the Corps in planning, designing, and constructing this project. The project cost breakdown is shown below in Table 1.

Table 1. TOTAL PROJECT COSTS

	Totals	Federal Total	Non-Federal In-kind
PMP and PIR Development	$3,309,103	$2,886,508	$422,595
Design (DM, NEPA, PCA & Gross Appraisal)	$2,610,000	$2,410,000	$200,000
Construction	$14,256,900	$14,256,900	$0
Land	$117,129,149	$38,000,000	$79,129,149
Totals	$137,305,152	$57,553,408	$79,751,744

9. Functional Area Plans

9.1 Advanced Formulation and Planning

Additional formulation studies will be conducted to evaluate alternative plans, both structural and non-structural, for economic, environmental and engineering effectiveness, based on study objectives and constraints. Formulation activities will include the selection of site suitability criteria followed by an iterative facility siting analysis based upon the site suitability criteria. Additional formulation and evaluation of alternative plans will be of sufficient scope to recommend the authorization of a plan determined to be the most feasible and cost-effective means of meeting the stated study objectives within the identified planning framework.

Alternatives will be developed and evaluated to meet the planning goals and objectives identified for the Project Implementation Report study. The following process will

be used to identify a recommended plan that is economically feasible and implementable from an engineering, economic, and environmental standpoint:

Problem Identification - The Corps, SFWMD and other participating Project Delivery Team members will review the problems and opportunities identified in the April 1999 Final Integrated Feasibility Report and determine if additional problems exist to be identified in the Project Implementation Report study. Scoping efforts, performed early in this phase by the Corps and SFWMD, will ensure that public concerns related to these problems are identified and addressed during the study. Planning goals, objectives, and constraints will then be developed by the Project Delivery Team.

Initial Plan Formulation - Alternate plans will be formulated to identify specific ways to achieve planning objectives, within constraints, to solve problems, and realize opportunities. This task will include public workshops in which ideas to meet the study objectives will be presented. Alternative plans will address environmental; urban and agricultural water supply needs; wetlands preservation and enhancements and water quality treatment requirements, as appropriate.

Initial Screening - This effort in the Project Implementation Report study will involve a qualitative assessment of the plan components and alternative combinations of those components. The preliminary assessment of each alternative plan will involve the measurement or estimation of the effects of each alternative plan and determination of the difference between without-plan and with-plan conditions for each of the planning objectives. The process will also include assigning economic and social values to the plans, using technical information gathered for comparison of plan alternatives. The plans will be screened to identify the most viable components for a detailed study through qualitative analysis and public workshops. This process will ensure that the plans to be evaluated are consistent with agency and local interests regarding water resource issues and natural system needs such as: wetlands and wildlife conservation, threatened and endangered species, economic development, comprehensive land planning, appropriate water quality standards, maintenance of water supplies, flood protection and sustainable agriculture. Through this qualitative analysis, the plans will be screened to identify the most viable components for more detailed study.

Select Final Array of Alternatives - Following completion of the initial screening, the plan alternatives to be considered in the detailed evaluation will be selected as the study progresses.

Final Screening - Modeling will be required for detailed design and environmental output evaluation purposes. Hydrologic and hydraulic model development, environmental model development, and water quality and water supply analysis will be required to refine plan formulation and evaluation. The evaluation of the final set of alternative plans will consist of analyzing the effects of the plans against various sets of evaluation categories and criteria to determine effectiveness in meeting the planning objectives. This analysis will

consider the requirements outlined in Chapter 373.1501 Florida Statutes and any applicable state and federal legislation (e.g., future Water Resource Development Acts). The results of these evaluations will be compared to identify significant differences among the plans.

Risk and Uncertainty Analysis - Risk and uncertainty are inherent in water resources planning and design. They arise from the innate variability of complex physical, biological, social and economic situations. This is particularly true for the evolving nature of environmental restoration. Risk and uncertainty factors will be considered as they relate to the evaluation of alternative plans. Appropriate techniques will be applied to evaluate risk and uncertainty for this plan.

Optimization of the Recommended Plan - Cost effectiveness and incremental cost analyses will be used to compare different outputs resulting from various levels of expenditures. This effort will include development of an implementation process that incorporates an adaptive assessment strategy for project implementation. This strategy will recognize that once restoration measures are implemented and monitoring begins, feedback is provided based on new insights gained from the response of the ecosystem and that sequential adjustments may be made to the project and future elements.

9.2 Engineering and Design

The engineering and design plan will provide descriptions of all engineering and design efforts necessary to implement the project. The scope of required surveys and aerial photography will be determined and requests will be prepared. The survey data will be reviewed for impacts of the project on existing utilities, and required relocations will be determined. Alternative plans will be investigated and design input will be provided to Cost Engineering to develop preliminary MCACES construction cost estimates for Plan Formulation. Structural designs will be developed for elements of the selected/recommended plan (levees, canals, spillways, and pump stations, etc.) Real estate requirements will be determined, including rights-of-way and temporary construction easements. Engineering input will be provided for required NEPA documentation and permits. Technical input from other Engineering Division and District elements will be coordinated in preparation of input for the Engineering Appendix to the PIR. Design Branch input will be prepared for the Engineering Appendix, including write-up and plates, to present the elements of project design considerations and construction procedures. Responses to ITR and interagency review comments will be provided, and the Engineering Appendix will be revised as required.

9.2.1 Hydrology and Hydraulics Studies

This account describes the investigative effort to collect and analyze the hydrologic and hydraulic data needed to formulate, evaluate and optimize plan alternatives, determined to be feasible and cost effective, to be recommended to Congress for authorization. The tasks will involve collecting existing hydrologic and hydraulic data; selection and/or development of other

appropriate hydrologic models; and modeling of existing conditions, future without project conditions, and ecosystem restoration alternatives.

Computer simulation models will be used to evaluate alternative plans for restoration and mitigation for flood control in the study area. The watershed modeling will consist of a hydrologic and hydraulic analysis of the north and south watersheds within the study area. Existing hydrologic data will be evaluated to determine the model simulation period to be used in the feasibility study modeling efforts. Existing data and modeling tools will also be evaluated for sufficiency.

The evaluation of existing and future conditions within the study area will be accomplished using both hydrologic and hydrodynamic models. Comparison of model output representing current and future conditions will be used to establish the impact of changes to the existing system. The output from the models for the existing conditions will be compared to output from the model runs representing future alternatives. This comparison will identify the environmental and flood control benefits/impacts associated with implementation of the selected plan.

The future "without project" condition describes what is expected to happen if none of the alternative plans evaluated in this feasibility study are implemented. The "without project" condition is the same as the "no action" alternative that is required to be considered by the Federal regulations implementing the *National Environmental Policy Act of 1969 (NEPA).*

Hydrology Review/Coordination - This task includes a review of all existing hydrology data for adequacy of basin specific data needed for hydrologic and hydraulic model efforts needed for this feasibility study. This task also includes the effort necessary to maintain coordination between the SFWMD and the Jacksonville District staff during the model effort.

Watershed Assessments - Key information to be collected for the selected watersheds will include: 1) a complete basin description (including drainage features, hydrogeology, topography, soils, and land use); 2) sub-basin delineation's; 3) an inventory of existing land management activities (including all water management systems and their regulatory status); 4) analysis of existing water quality data to provide an assessment of current conditions and trends. Watershed assessments will provide basin specific information needed to meet the data requirements of the hydrologic modeling, such as: Hydrologic Simulation Program-Fortran (HSPF), MIKE SHE, Modflow, Modbranch, UNET, HMS or other equivalent watershed model.

Rainfall-Frequency Analysis - Appropriate methodology will be used to determine the relationships between rainfall, runoff, and frequency for the study area. Design storms will be developed for frequencies from 2-year to 100-year and the Standard Project Flood. This data will be used to perform design analysis of plan alternatives.

Develop Hydrologic Models - A numerical model capable of simulating the surface water management plan alternatives for the basins in the study area will be developed and used

to evaluate impacts of the alternatives. Model output will be used to evaluate the hydrologic effects of the various plan alternatives for comparison.

Groundwater/Surface Water Model Development and Application - In order to evaluate the restoration and flood control of any alternative adequately, accurate groundwater/ surface water models are needed. This is especially true in the southwest Florida area where groundwater/surface water interactions are significant in water movement issues. The integrated groundwater/surface water models can be used to analyze restoration and flood control issues.

Hydraulic Design Final Alternatives - Hydraulic models will be compiled using various floods for which historic hydraulic data is available. Programs such as Mike11, HEC UNET, or similarly documented models have been used to perform hydraulic design for plan alternatives within the study area. These will be reviewed and the appropriate models will be selected to use for quantitative simulations. Flood elevations versus frequency relationships will be developed. Hydraulic design will be accomplished in sufficient detail to adequately obtain costs of canals, pump stations, spillways, earth plugs, earth berms, reservoir outlets, and spillways.

Operations - H&H will prepare Water Control Manuals and develop operational criteria for the project.

H&H Participation in the TRC - Prepare for and attend TRC. Preparation should include activities necessary to be responsive to anticipated TRC questions/comments. Respond to comments resulting from TRC.

Hydrology and Hydraulics Write-Up for Draft Report - This activity includes preparation of the narrative report which documents all hydrology and hydraulics studies performed for the feasibility study. Results of the hydrologic model evaluations and other hydrologic investigations will be compiled and incorporated into the draft interim PIR in a Hydrology and Hydraulics appendix. Included in this activity is the effort necessary to compile the data, write the report, and prepare all plates necessary to document model development, output, and evaluation.

H&H Participation in the FRC - Prepare for and attend FRC. Preparation should include activities necessary to be responsive to anticipated FRC questions/comments.

Finalize Hydrology and Hydraulics Write-up - This task includes the effort required to address all comments generated at the FRC. This activity also includes the effort required to finalize the hydrologic model investigation documentation for the final *Project Implementation Report*.

Support for Development of PMP - This activity includes the effort required to provide H&H input to the update of the Project Management Plan for project modifications recommended by this feasibility study. This includes the effort required to develop the time and

cost estimates to perform pre-construction, engineering, and design (PED) studies recommended in this feasibility study.

9.3 Construction Management

The Construction Phase of the SGGE features will begin after completion of reviews of the plans and specifications for the project, both internally and with the South Florida Water Management District, subject to the receipt of adequate Federal and Local construction funds. At that time, remaining efforts will include certification of all real estate interests necessary for the construction contract, securing of all necessary permits, and preparation for all necessary relocations or replacements. Once the lands have been certified and initial construction funding is available, the Corps of Engineers will advertise and award the construction contract. The advertisement and award will be subject to the Federal Acquisition Regulations and issuance of Notice to Proceed, the Corps of Engineers' Gulf Coast Area Engineer will monitor the construction in accordance with agreed designs and objectives, and inform the Project Managers for the Corps and the South Florida Water Management District. The Corps Project Manager will coordinate contract changes and funding requirements with the Area Engineer as the project process through the construction phase. All changes in the work shall be made only through the Area Engineer in charge of the contract. No change instructions of any kind shall be given directly to the construction contractor except by the Contracting Officer or the Administrative Contracting Officer in order to prevent financial obligations for which funds might not have been made available. As construction on each independently functioning unit nears completion, the Project Manager will advise and schedule a final inspection date with the South Florida Water Management District's Project Manager and the Area Engineer. After final inspection, the completed project works will be signed for and transferred to the South Florida Water Management District. Final acceptance will not occur until the functional unit under consideration has been completed.

9.4 Real Estate

The real estate analyses will include a determination of the estates required for the lands to be acquired for the project, an appraisal of the costs of lands and damages, and preparation of a plan for acquisition of these lands. Other tasks include an analysis of physical takings, attorney's opinion of compensability, obtaining rights of entry for various field collection activities, and providing input to the Project Cooperation Agreement (PCA) and Project Implementation Report (PIR). This activity includes all written memoranda, opinions, database development reports and other documents provided by Real Estate personnel as required in support of feasibility phase planning efforts.

Obtain Rights of Entry – According to specifications to the contract, the contractor should obtain access/rights-of-entry. However if unsuccessful, notification to real estate by a request for rights of entry by section, township, and range parameters, permission will be

obtained from landowners to temporarily use his/her land for a specified time and purpose. These will be obtained for purposes of environmental investigations, cultural assessments, core sampling, surveys, explorations, etc.

Ownership Information - Upon notification of alternative feature description and location by section, township, and range parameters, the following data for areas under consideration as project features will be obtained:

- Tax maps and public right-of-way maps
- List of property owners
- Tax rolls including value, structure, type, etc.
- Zoning information
- Last search of records for each parcel
- Anticipated mineral extraction and determination if such activity is permitted by law
- Identification of all structures potentially impacted that are occupied and may be removed due to project implementation
- Identification of all known public utilities located within the proposed project area that may require relocation
- Identification of sponsor acquisition costs and real estate administrative costs associated with implementation of each alternative
- Location maps (city or county) of proposed construction areas including material disposal areas

Preliminary Real Estate Cost Estimates - Prepare lands, easements, rights-of-ways, relocations and disposal areas (LERRD) preliminary cost estimates for multiple components for the preliminary assessment of project alternatives during the plan formulation stage of the study. This will require a similar method of estimating costs performed during the Project Management Plan (PMP). The preliminary cost estimates along with the aforementioned ownership information will be compiled in the Geographic Information System (GIS) database as polygon attributes for use in the evaluation analyses.

Section Corner Survey - This survey is required to establish state plane coordinates for sections and townships within the study area for real estate mapping purposes. This data should be in Transverse Mercator Projection, Florida East Zone using 1927 Datum. A Global Positioning Station will be used. It is assumed that other data, provided by the state, will also be available. The survey data will be incorporated into the GIS database and used to map property boundaries and ultimately develop real estate acquisition costs for alternatives.

Real Estate Acquisition Maps - Prepare an initial set of maps and drawings, utilizing the GIS database developed for this task, that delineate the real estate acquisition lines based on technical design drawings developed during the feasibility phase. This activity is dependent upon receipt of the footprint of project features and tax maps followed by a coordination meeting with the study manager to assure all project features are identified including temporary

construction areas, road access, borrow/disposal areas, etc. These maps will reflect the minimum real estate required for project purposes.

Physical Takings Analysis - This analysis will result in a written legal opinion as to whether flooding induced by construction, operation, or maintenance of the proposed project will result in a taking of an interest in real property for which just compensation must be paid to the owner. The opinion must describe the analysis, to include hydrologic data incorporating depth, frequency, duration, velocity, and extent of induced flooding based on economic data, as well as relevant state and Federal law, and present a conclusion on the takings issue.

Relocations Analysis - After a determination through engineering design of which facilities must be relocated, including roads, railroads, pipelines, utilities, bridges, and cemeteries, a preliminary legal opinion on whether a substitute facility is required will be documented. The opinion makes findings on whether the owner has a compensable interest, whether the owner has a legal duty to continue to maintain and operate the facility/utility, and whether federal law requires the provision of a substitute facility rather than mere payment of market value for the property acquired. The preliminary legal opinion differs from the final legal opinion only in its acceptance as fact of the owner's statement of its interest in the property, without a search of property records. A baseline cost estimate must be developed for the relocations to include an engineering cost estimate for the performance or construction of the relocation and the value of the land. The Real Estate Supplement (RES) will include a statement as to whether the Federal government, the local sponsor, or owner will be responsible for the relocation and acquisition of new rights-of-way, the costs for relocation, and land to be acquired allocated to each entity.

Gross Appraisal - This task includes activities necessary to complete a detailed, supported appraisal of the collective real estate requirements and impacts of the recommended plan as required by *ER 405-1-12*. The Gross Appraisal must be of sufficient detail to provide an accurate cost estimate sufficient for Congressional authorization. Review and approval of the Gross Appraisal Report is accomplished concurrently with the draft PIR. The Gross Appraisal will be submitted concurrently with the draft PIR and is dependent upon receipt of the final recommended plan including real estate maps with project features, estates to be appraised, tax and ownership information, zoning and land use maps.

Real Estate Supplement (RES) - The RES to the PIR will outline the minimum real estate requirements for the proposed project as required by *ER 405-1-12.* It will contain a description of the area; the acreage and proposed estates, including non-standard estates, and justification for the use of non-standard estates; a discussion of any land owned by the Federal government, the local sponsor, or any public entity; a discussion of the local sponsor's ability to acquire LERRD; a discussion of mineral activity, if any, and the attitude of landowners; at least a preliminary assessment of facilities/utilities to be relocated; and any other relevant real estate information appropriate for the project.

This activity also includes development of a detailed cost estimate for the recommended plan that will be input for the MCACES (engineering) cost estimate. This baseline cost estimate will be developed from the Gross Appraisal and will include other costs such as *Public Law 91-646* relocations, administrative costs, and contingencies.

Draft Project Cooperation Agreement (PCA) and Post-PIR Phase PMP Input - This activity includes development of data necessary to support other documents pertinent to the project including, but not limited to, the post-PIR phase PMP and the draft PCA. For these documents, a detailed schedule of land acquisition will be developed.

9.5 Contracting and Acquisition

9.5.1 CERP Contract Management

All project elements designated for performance by contract will be processed in accordance with the procuring agency's (Corps or SFWMD) standard acquisition policies, and in accordance with all applicable state and federal laws, regulations and executive orders. The procuring agency will have exclusive authority over contractual actions; however, the Corps and the SFWMD agree to provide each other with the opportunity to review and comment on solicitations for all contracts, including relevant draft scopes of work, prior to issuance of solicitations. The Corps and the SFWMD will offer each other the opportunity to review and comment on contract modifications, including change orders, prior to issuing the contractor a Notice to Proceed. If it is necessary to conduct non-procuring agency reviews and solicitation advertisements concurrently, review comments will be submitted to the procuring agency prior to the date established for receipt of bids or proposals. The procuring agency's project manager will work with the contracting officer and appropriate staff from the Corps and SFWMD to develop a Source Selection Plan and a Technical Evaluation Team for each project. The Corps and the SFWMD agree to offer each other the opportunity, if desired, to participate in the development of a Source Selection Plan and to serve as a voting member on the Technical Evaluation Team for all competitive acquisitions. All procurement information will be managed to maintain the integrity of the procurement process as required by the procuring agency.

The Corps and the SFWMD agree to share available information that will help expand the list of qualified firms for participation in procurement opportunities. The parties agree to develop and conduct outreach activities designed to keep prospective contractors and vendors informed of procurement opportunities and to promote to the maximum extent practicable participation by small, disadvantaged and women-owned businesses. These activities will be conducted in a manner consistent with applicable state and Federal laws, regulations, executive orders, and policies.

9.5.2 SGGE Project Contracting and Acquisition

Depending on the complexity of each contract to be awarded under this project, the Corps will select the appropriate solicitation method and contract type. A separate acquisition plan will be prepared for each contract. Acquisition plans will be added to Appendix M of this PMP as they are prepared and approved.

The purpose of the acquisition plan is to ensure that the Corps and the SFWMD meets their needs in the most effective, economical, and timely manner. A team consisting of those who will be responsible for significant aspects of the acquisition (i.e., contracting, fiscal, legal, and technical personnel) will be formed to develop the acquisition plan. The Competition in Contracting Act, as implemented in the Federal Acquisition Regulations Part 7, requires agencies to perform acquisition planning and conduct market surveys in order to promote and provide for full and open competition.

9.6 Quality Control

Quality Control is the process employed to ensure the performance of a task meets the agreed-upon requirements of the customer and appropriated laws, policies and technical criteria, on schedule and within budget. An Overall Quality Control Plan (QCP) Appendix N, should be prepared for projects that, due their size or complexity, are divided into several products after the feasibility phase. The QCP will be supplemented as necessary to address each of the individual products. Overall, the QCP must provide the continuity necessary to bind all products together and reflect project decisions reached during the feasibility phase. QCP supplements should be consistent with the overall QCP and should address issues that pertain to the specific product.

9.7 Water Quality and Permitting

Based on conceptual ideas as to what the final plans would look like it is anticipated that the following permits/concurrence from the state will be needed.

- A water quality certification (WQC) from the State of Florida will be needed for all the canals and wetland areas that may be filled during the project. Levees and structures that may be built to protect landowners that may cover wetland areas will also be included in the WQC application.

- A Noticed General Permit from the State of Florida for Environmental Restorations projects may cover alternately separable portions of the project. This NGP is only applicable to the Water Management Districts of the State and will have to be acquired through the SFWMD.

It is felt at this time that no other state local or county permits will be needed for this federal project. The State of Florida currently has plans to include the large restoration projects

covered by the CERP project into another large General Permit however this plan is still in the formative stage and will be completed within the next 12 months.

All the above options will require preparation of an application package with complete plates and designs for the final package. It is estimated that at least $25,000 will be needed for the application process.

During the WQC process, an inventory of water quality data relevant to the project will be undertaken. It may be necessary to augment the existing data with discrete water quality monitoring in order to determine if restoration of water quality can be a project restoration goal. For water quality information, it is estimated that $30,000 will be needed during the project study phase.

9.8 Public Outreach and Involvement

Due to the intense public, political, and media interest in the restoration of the southwest Florida ecosystem, public involvement is a critical component of the study effort. Three goals for public involvement have been identified:

- Gather input from the diverse groups outside of the study team to assist in problem definition and identification of opportunities and potential solutions.

- Develop relationships critical to the success of the study and the implementation of the recommendations of the study.

- Promote realistic expectations about the Southern Golden Gates Estates (SGGE). This is complicated by a lack of awareness about the Corps' study process and the requirements for the study to meet Federal planning guidelines, such as, including the public in the process, formulating alternative plans, assessing impacts, and estimating costs.

Public Workshops

This activity will consist of three (3) workshops to gather information as well as to provide feedback to the public. The workshops should be scheduled such that they occur approximately once a year (after the initial year) to foster interest in the plan. Each workshop will be held in Naples or in different geographical locations in the study area.

Public Workshop #1 - The first public workshop will be conducted at the beginning of the Project Implementation Report (PIR) process. The purpose will be to identify important resources, problems, and opportunities as required by the *National Environmental Policy Act (NEPA).* The second purpose of this workshop will be to present the purpose and scope of the restoration plan. This workshop will be conducted as part of the initial screening process to ensure that the proposed restoration plan will be consistent with agency and local interests and

perspectives with regards to wetlands and wildlife conservation, economic development, comprehensive land planning, maintenance of water supplies, flood control, and agriculture. The workshop could also include economic development opportunities connected with ecosystem restoration and water supply.

Public Workshop #2 - The second public workshop will be conducted to respond to public comment from the first workshop and educate the public on technical aspects of the plan. The workshop will provide an opportunity for the public to offer additional comment on technical issues. This workshop will be held midway during the PIR process.

Public Workshop #3 - The last public workshop will take place in conjunction with release of the final draft Project Implementation Report and will include a presentation of the plan's conclusions.

Community Meetings

Community Meetings - Throughout the duration of the plan, many opportunities will be developed for the public to get information outside of formal public workshops. Civic associations, neighborhood associations, universities and environmental groups located in areas that may be impacted by the plan will provide avenues for the study team to disseminate information to the public and enhance community awareness and support. Public affairs staff will be assigned the task of preparing presentations for these purposes. Staff assigned to this task will be kept abreast of the plan's progress and issues and make revisions to the presentations as necessary. It is expected that these presentations will be modified annually, however, when study progress or issues dictate. All tools developed for these presentations will be reviewed and revised as necessary.

Much public opinion is shaped by the interested public talking to a local "expert", such as, an employee from the Corps, SFWMD, or another agency. This activity of the public involvement plan relies on and supplements the public affairs internal information activities. These employees are valuable sources of information that can serve as community experts to discuss ongoing study progress.

Publications

At opportune times throughout the plan, newsletters and other information pieces will be developed to provide feedback to the public.

Written Publications – Written publications will include public notices identifying the purpose and location of the workshops, fact sheets describing study progress, and public information brochures. In addition, regular submissions to the SFWMD's monthly publications will be developed. Once special articles have been written, they can be placed in the newsletters and newspapers of local environmental groups and civic associations, when appropriate. To

estimate costs of printing and mailing, it is assumed the general mailing list will not exceed 2,500.

Electronic Publications - Electronic versions of publications will be incorporated into the Internet system through the World Wide Web to facilitate greater public access to informative documents. A Web home page has been developed and is maintained for information access by the public on the Comprehensive Everglades Restoration Plan (www.evergladesplan.org) and on the SFWMD Web page (www.sfwmd.gov/org/exo/swflstudy). Information on the SGGE, including scheduled meetings, has been and will continue to be incorporated.

Internal Audiences

The study team will host SGGE update briefings for others in the Corps' Jacksonville office and SFWMD offices, as appropriate.

Media

The overall public involvement strategy must include a media plan for the restoration plan. The media not only offers a valuable resource for providing information to the public, but also is a resource for providing information to the planning process.

News Releases - News releases will be issued at the beginning of the PIR and prior to the various workshops to provide an opportunity to hold discussions with interested media representatives and explain the purpose and strategy for addressing the study objectives. It is assumed that the study will receive significant local media coverage.

Media Opportunities - The media will be invited to meet with the study team to discuss various aspects of the study in-depth. Media tours will also be arranged prior to any significant actions as a source of educating the media on the complexities of the system. Ample opportunities will be available for the media to be briefed with an emphasis on concerns and issues that may be important to their audience. When appropriate to the PIR process, special in-depth programs with local radio and television stations will be developed to ensure ample media opportunities and accurate coverage of the study. Due to the emphasis on local environmental issues, relationships with public radio and television stations in the southwest Florida market should be developed early in the study. The development of a broadcast quality video addressing the questions and concerns of the general public could be produced and broadcast on public television. Once the program has aired, duplicates could be distributed to schools, and an edited version could be used at community meetings and distributed to schools and interested community groups. Visits to editorial boards, appearances on major public affairs programming, as well as the development of guest editorials will be part of the campaign to reach the public through media outlets. This will provide an opportunity to further develop the public's understanding of the Corps process.

Outreach

The outreach activity will target specific groups of the public to promote long-term relationships and understanding of the results of the PIR. This activity involves coordination and preparation of meetings, workshops, and written correspondence with interests outside the Corps and SFWMD.

SFWMD Committee Meetings - Several advisory committees have been established to assist the SFWMD in the preparation of water supply plans and other activities relating to the management of water resources in southwest Florida. Specific to the SGGE project some of these are: the Lower West Coast Water Supply Plan (LWCWSP) Advisory Committee, the SGGE Technical Committee, and the Southwest Florida Feasibility Study team. These committees, as appropriate, will be asked to review and comment throughout the study to ensure that SFWMD's regional water resources planning efforts and the PIR are consistent and cohesive. This process will provide opportunities for local and regional interests to provide guidance and input into the planning process.

Meetings with Other Groups - Coordination with the aforementioned groups and others will occur on an as-needed basis, or when requested to do so by the group, to ensure the plans to be evaluated are consistent with local interests and perspectives with regards to wetlands and wildlife conservation, economic development, comprehensive land planning, maintenance of water supplies, and agriculture.

Partnering

Partnering is a process of frank and open discussion on expectations and requirements that will shape the coordination, participation, and decision-making process.

Partnering Workshop - A workshop will be held just prior to initiation of the PIR with study team members who have been identified by the Corps, SFWMD, and other state and Federal agencies that have decision-making responsibility for implementing a recommended PIR. This workshop will lay the foundation for better working relations at the staff level to include better dispute resolution. This team-building workshop will help foster an atmosphere of trust and candor in communications and promote achievement of mutually beneficial goals.

Extended Partnering Meetings - Due to the number of stakeholders involved in this PIR, some partnering beyond the immediate study team may be necessary. Within the Corps, the study team will meet with counterparts in Division and Headquarters periodically and invite participation in various workshops and discussions on issues. The study team also will meet and exchange information with various representatives of the SFWMD including members of the Governing Board, the Big Cypress Basin Board, the LWCWSP Advisory Committee, and the Southwest Florida Feasibility Study Team. The SGGE study team will brief the SFWMD's Governing Board, in session, a few times during the course of the PIR. Senior staff from other Federal and state agencies such as the National Park Service, Environmental

Protection Agency, the U.S. Fish and Wildlife Service, the Florida Department of Environmental Protection, and the Florida Fish and Wildlife Conservation Commission will receive on-going briefings on the PIR's progress.

9.9 Environmental and Ecological

This section will include cooperative data collection, baseline development, and evaluation of the study area's cultural, environmental, and ecological resources. The work will entail the preparation of a National Environmental Policy Act (NEPA) document, Planning Aid Letter (PAL), Fish and Wildlife Coordination Act Report (CAR), and Biological Opinion (BO) if needed. Information in these documents will be used to assess the environmental impacts and benefits associated with the project and to assist with the formulation of alternative restoration plans. Conflicts with Federal or State threatened and endangered species will be addressed. Other resources of particular concern include wetland degradation, point source freshwater discharges into estuarine systems, increased fire frequency, exotic species invasion, and loss of organic soils. Project impacts upon historical, architectural, and archeological resources will also be addressed in this section.

Studies will be conducted in concert with the U.S. Army Corps of Engineers (USACE) as lead agency, U.S. Fish and Wildlife Service (FWS), U.S. National Park Service (NPS), U.S. Environmental Protection Agency (EPA), U.S. National Oceanic and Atmospheric Administration (NOAA), USDA Natural Resources Conservation Service (NRCS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Division of Forestry (FDOF), Florida Department of Environmental Protection (DEP), South Florida Water Management District (SFWMD), and Florida State Historic Preservation Officer (SHPO). Pre-project surveys will be used to establish baseline environmental conditions for the project area. Monitoring, as identified in the NEPA documentation, will be conducted during and after project construction to insure that all environmental requirements are met. Post construction environmental follow-up is the responsibility of the sponsor for the life of the project. Regular monitoring reports will be delivered to the Corps for coordination with EPA, FWS, and State agencies as needed.

These activities will assure compliance with Federal environmental statutes and coordination with Florida agencies and programs. Public participation is accomplished through workshops and letter responses during the NEPA process.

9.10 Value Engineering

Engineer Regulation 1110-2-1150 requires a value engineering study for all projects with an estimated construction cost of $2.0 million or more. A value engineering team study shall be performed on the earliest document available that establishes the functional requirements of the project and includes a Microcomputer Aided Cost Engineering System (MCACES) cost estimate. The Project Delivery Team (PDT) shall determine whether the initial value engineering study shall occur during feasibility phase or be delayed until the Pre-

construction, Engineering, and Design (PED) phase. After the initial VE study is completed, and based on the recommendation of the PDT, the Commander will certify that the design achieved in the PED effort is the most cost effective for this design phase. In addition, during the preparation of each design document, additional value engineering team studies will be conducted if the PDT identifies areas for potential cost savings and/or design improvements. The sponsor and the District's value engineering officer will be on the PDT.

9.11 Water Control

The water control plan includes regulation schedules and operating criteria for the project and additional provisions as may be required to collect, analyze, and disseminate basic data; prepare detailed operating instructions; ensure project safety; and carry out the operation of the project in an appropriate manner. Historical data will be collected and analyzed. Operational rules and criteria will be developed for all water control structures, including pump stations, culverts, and spillways. The water control plan should ensure that the objectives of the Comprehensive Plan (CERP), as well as other authorized project purposes, can be met. This will require transforming the necessary hydrologic modeling into practical, real-time operational criteria and rules. The Corps and the SFWMD will jointly develop the water control plan. The development of the water control plan should be coordinated with the South Atlantic Division (SAD) consistent with applicable regulations.

9.12 Operations and Maintenance

This Operations and Maintenance Plan (Plan) presents the policy and specific actions to be adopted for operating and maintaining the project elements after completion of the construction of the project to ensure that the project objectives are accomplished without adverse socio-economic and environmental impacts.

See Appendix T, Operations, and Maintenance Plan, for more information.

9.13 Socioeconomics

Economic studies will focus on economic benefits and costs, to the extent required for this report. In this project implementation report (PIR), ecosystem restoration project outputs will not be expressed monetarily. Economic studies will be concerned mainly with effects other than these non-monetized environmental outputs. Required input will be engineering cost estimates, real estate cost estimates, and hydraulics and hydrology (H&H) information for the various alternatives. Documentation may include text, tables, charts, graphs, and maps.

Costs of Alternatives

An important role of economic evaluation will consist of properly expressing costs of alternatives under consideration. Costs must be calculated as the difference between costs

incurred with the plan and costs that would have been incurred in the "without-project" condition.

Analyze Construction/Implementation and Land Acquisition Costs - While the construction implementation and land acquisition data will be developed in separate individual efforts, they will need to be translated into proper units to assist in the comparison of alternatives. Careful attention will be necessary for the issues of price levels, timing, and present worth calculations.

Analyze Operation, Maintenance, Rehabilitation, Repair, and Replacement (OMRR&R) Costs - Most alternatives are expected to have different OMRR&R costs. Such OMRR&R activity represents part of the economic costs of the project and will be evaluated and properly included in the overall accounting of economic costs.

Analyze Monitoring Costs - Some alternatives may require explicitly designed monitoring programs to acquire knowledge of project effectiveness. Such information would then be used to make needed adjustments and changes for follow-on work. The costs of such programs are part of the costs of alternatives and must be accounted for. As with other categories of costs, the NED cost is the difference between the "with-project" and "without-project" conditions.

Other Costs and Benefits

This work includes an estimation of both increases in project benefits and losses in project services. Benefit areas that could be impacted include flood damage reduction benefits, economic effects of changes in water supply (agricultural and non-agricultural), commercial fishing, recreation, navigation, and other costs and benefits. It is possible that in some cases of benefit categories, there is a very small likelihood of measurable effect. Nevertheless, the potential for effect will be addressed.

Fishery Studies - The nature of commercial and sport fisheries in the study area will be investigated and documented. A range of the potential economic effects associated with changes brought about by implementation of potential alternatives, and their likelihood, will be estimated to the extent possible. This will involve consultation with Federal and state agencies, analysis of historical data, and market analysis of affected fisheries.

Flood Damage Studies – To the extent that measurement of flood damage reduction benefits for alternatives need to be ascertained, the benefits will be estimated as the difference in flood damages with the alternative versus damages in the "without-project" condition. They will be based on stage-damage-frequency and duration-damage-frequency relationships. This will be accomplished by combining stage-frequency information, available once H&H data for relevant areas are identified, with stage-damage relationships for those areas. Estimates of structure values (replacement cost less depreciation), location, first floor elevations, and average stage-damage relationships will be estimated. Agricultural land use by crop type, and stage-

duration-damage relationships will be estimated. These relationships will provide the basis for estimating the effect of the differences in flood damages between "without-project" conditions and each of the alternatives to be evaluated. Such analysis will be of an iterative nature, with the level of detail to be determined by the nature and extent of H&H effects as they become known, and the level of detail available based on H&H analysis results.

Navigation Studies - While it may be unlikely that project implementation would affect navigation, such effects will be addressed if during the course of the PIR activity it is determined that implementation of the SGGE project would make a difference for navigation

Recreation Studies - The alternatives to be evaluated may impact recreational opportunities, including fishing, boating, and tourism. The quality and quantity of recreation experiences expected to be impacted by project implementation will be addressed.

Water Supply Studies – Project implementation will potentially impact effective water availability (quantity, quality, and timing). Analysis will include identification of such effects, and an assessment of the economic dimension of the impact, to the extent required for the PIR.

9.14 Environmental Justice

Executive Order 12898 requires the Federal government to achieve environmental justice by identifying and addressing disproportionately high adverse effects of its activities on minority and low-income populations. It requires the analysis of information such as the race, national origin, and income level for areas expected to be impacted by environmental actions. It also requires Federal agencies to identify the need to ensure the protection of populations relying on subsistence consumption of fish and wildlife, through analysis of information on such consumption patterns, and communication to the public of associated risks.

This Environmental Justice plan presents six essential elements: Initial Screening and Scoping, Public Participation, Environmental Analysis, Community Analysis, Alternatives and Mitigation, and Reporting.

Initial Screening and Scoping - Initial Screening and Scoping will seek to identify potential issues and estimate the geographic extents of the environmental areas and the low income, minority and tribal populations that may be affected. Map products may be created as appropriate to display geographic information. The geographical extent of the potentially affected area will be estimated and adjustments to the geographic extents will be made, as required, when knowledge improves. In determining who may be affected, both residents and people who frequent the area are to be considered. It will be determined if the composition of the resident community of the affected area is greater than the low income, minority or tribal population percentage in the general population. Impacts to people due to a community's distinct cultural practices or different patterns of living, such as a principal subsistence on fish, vegetation, or wildlife consumption or the use of well water may be relevant to the analysis.

Public Participation - Public participation is intended to reach low income, minority, and tribal populations to identify issues of true concern and allow relevant issues to be in the early analysis portion of the process. This may involve activities beyond the standard advertising and public outreach practices and will seek to overcome linguistic, cultural, institutional, geographic, and other barriers to meaningful participation. Meetings will be held in adequate facilities at hours appropriate for those attending. Public participation will be active throughout the entire project to educate, encourage input, answer questions, listen to concerns, and tell people how we intend to deal with those concerns.

Environmental Analysis - The Environmental Analysis element will require the project personnel to monitor the analysis of the environmental impacts throughout the National Environmental Policy Act (NEPA) process. They will ensure that Environmental Justice issues learned through the Initial Screening, Scoping and Public Participation process receive appropriate treatment.

Community Analysis - The Community Analysis element will be triggered primarily in the NEPA process requiring an Environmental Assessment or Environmental Impact Statement (EIS). Through appropriate tools, it will be determined if the proposed project's environmental impacts will have a high and disproportionate effect on low income, minority or Tribal communities. This determination will consider the intensity of effects not only for direct impacts on the health and environmental quality but also for indirect, multiple, and cumulative effects. Additionally, it is recognized that the cultural, social, occupational, historical, and economic characteristics of the community may amplify the environmental effects.

Alternatives and Mitigation - The Alternatives and Mitigation element will become active if and when it has been determined that high and disproportionate effects will occur to low income, minority and Tribal communities. The purpose of this element will be to develop a reasonable array of alternatives, including a "no action" alternative to mitigate the projects high and disproportionate effect. Public participation will be an important factor in this element as affected communities will be involved in the process of identifying and evaluating alternatives to mitigate affects.

Reporting - The Reporting element will comply with all NEPA requirements to provide Environmental Justice discussions within each Record of Decision (ROD). Reporting will be an iterative process overlapping with the other plan elements.

9.15 Hazardous, Toxic, and Radioactive Waste Assessment

The objective of this activity is to identify; investigate; and assess Hazardous, Toxic, and Radioactive Waste (HTRW) and their potential impacts to the study area. The results of the HTRW assessment conducted during the feasibility study phase should provide rationale for proceeding into the project implementation phase.

Civil works project funds are not to be employed for HTRW-related activities except as provided in *ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects*, or otherwise specifically provided in law. HTRW sites should be avoided whenever practical during project implementation. This can be accomplished, during the feasibility phase and before any land acquisition begins, by early identification of HTRW sites and potential HTRW impacts.

Plan formulation, selection, and project alternative design may be substantially influenced by the presence of HTRW in the study area. It is therefore imperative that HTRW assessment be conducted early in the feasibility phase to help plan formulation and evaluation. Alternative plans should consider avoidance of HTRW as a possible response. At least one alternative plan should be formulated to avoid HTRW sites to the maximum extent possible, consistent with study objectives.

ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects describes many other phases of evaluation of the potential effect of a site. In general, HTRW assessment involves the following: (1) archive research and site reconnaissance to identify and select HTRW sites in the study area which could potentially impact project implementation, (2) site visits and assessment of the nature and extent of HTRW contamination at these select HTRW sites to the degree necessary to determine potential impacts on project implementation, (3) qualitative assessment of potential impacts to human health and the environment in the absence of response action, to the degree necessary to determine potential impacts to project implementation, (4) HTRW response alternatives analysis, (5) HTRW response cost estimate, (6) coordination with sponsor, and (7) preparation of the HTRW appendix to the PIR. Based on the description of the proposed work and the relative isolation of the areas in question it is felt at this time that a detailed cost estimate of further phases after the archive search and preliminary screening will not be needed. The following paragraphs describe the initial evaluation components.

Archive Research & Site Reconnaissance - Identification of HTRW sites in the study area will require archival research and site reconnaissance. This will involve database searches and interviews with Federal, State, or local regulatory agencies; Environmental Protection Agency (EPA); Florida Department of Environmental Protection (DEP); South Florida Water Management District; U.S. Army Corps of Engineers Regulatory Division; County Environmental and Health Departments; etc. This will also include review and analysis of aerial photographs, field reconnaissance, site inspections, and analysis of building and utility layouts. Examples of potential HTRW sites include facilities which generate HTRW subject to the Resource Conservation and Recovery Act, HTRW-contaminated sites listed on EPA's National Priority List (Comprehensive Environmental Response, Compensation, and Liability Act sites), Defense Environmental Restoration Program for Formerly used Defense sites contaminated with HTRW or ordnance, EPA Brownfields sites, petroleum-contaminated sites subject to DEP's Petroleum Cleanup Program, HTRW Treatment, Storage and Disposal facilities, landfills, fire protection training areas, agricultural areas with potential pesticide/herbicide contamination, mining areas, transformer

storage areas, bulk product facilities, marine fueling facilities, wood treatment/preserving facilities, dredge disposal sites, dry cleaning facilities subject to DEP's Dry cleaning Solvent Cleanup Program, and land or water bodies adjacent to the above-listed sites. This list is not comprehensive.

A visual survey of the potential project sites will be made to identify the potential for HTRW. Evidence of contamination could include surface or partially buried containers, discolored soils, seeping liquids, films on water, abnormal or dead vegetation or animals, suspect odors, dead-ended pipes, abnormal grading fills or depressions. An experienced and qualified person should be part of the field visits and should make the record searches, interviews, and on-site visual evaluation for possible HTRW contamination.

Once HTRW sites within the study area have been identified, those sites, which could potentially impact project implementation, must be selected. Some of the factors which should be taken into consideration include location of the HTRW site within the study area (close in proximity to land associated with project alternatives or critical project areas, or remote location), status of the HTRW site (has the site already been investigated, characterized, remediated, etc.), and the degree of risk that the HTRW site may pose to human health and the environment.

This preliminary assessment phase will result in an appendix which provides the results of the database search; the site visits and gathering of data from existing sources, if needed; and an evaluation of the number and relative importance of any HTRW sites which are found.

Coordination with the Sponsor - The scoping, execution, and findings of the HTRW assessments conducted during the feasibility phase are to be coordinated with the local sponsor. Should there be a known HTRW problem, the letter of intent for the sponsor to fund the sampling program and/or response action should state that the local sponsor shall accept responsibility for required sampling and/or response, or that the sponsor has initiated procedures requiring the responsible parties to respond. The project authorization document and the post-feasibility phase Project Management Plan should include language describing how response actions will be coordinated with project construction and that the local sponsor is required to provide 100% of the cost of the response action. Construction should not be undertaken until response actions have been completed on lands impacted by HTRW.

COST: The cost for this item for PD-EE will be $15000. Five thousand dollars is estimated for the database search and $10000 for the site visits and attendance at meetings. Should there be a problem found, additional funding would have to be appropriated or the local sponsor provide the cost estimates for removal.

10. Restoration, Coordination, and Verification (RECOVER) Integration

RECOVER was organized to examine all projects in a systematic manner to ensure the success of the Comprehensive Everglades Restoration Plan. RECOVER ensures that a system-wide perspective is maintained as each project is planned and implemented. As a part of this responsibility, RECOVER will evaluate the SGGE Restoration Project Implementation Report for its contribution to the overall system. RECOVER will also provide support to the SGGE Restoration PDT for maximizing the compatibility and performance of the restoration project within the context of the full plan. In general, it is assumed that SFWMD and USACE will share the workload necessary to assist the PDTs, and no other agency will be requested to support this task. The following describes the RECOVER tasks necessary to assist the PDT:

Initial PDT Contact - The RECOVER Team will make initial contact with the SGGE Restoration Project team. RECOVER will organize a briefing for the PDT that includes the CERP history and vision as to how each project was formulated and how it fits into the larger picture of the Comprehensive Plan. To insure adequate coordination between RECOVER and the project team, a point of contact from RECOVER will be assigned. This task will be shared equally between SFWMD and USACE.

Review PDT Deliverables - The RECOVER Team will work with each project team in the development of the project management plan to insure that a formal review process for the project is in place, and also to discern other appropriate points of support by RECOVER. These will be documented in the project management plan. Further, RECOVER will review draft and final report products produced by the SGGE PDT. This task will be shared equally between SFWMD and USACE.

Continuing PDT Contact – RECOVER will provide references to information that will help the project team understand the system-wide performance objectives of the Comprehensive Plan. The PDT will develop its own performance measures, which may be based on system-wide targets as well as local targets. RECOVER point of contact will be available to assist in the development or review of performance measures to insure compatibility among the system-wide and project measures. RECOVER will assist as necessary in the development of the 'without-project' condition. One goal of each PDT will be to provide system-wide performance that, at a minimum, meets the performance predicted for CERP. RECOVER will aid the PDT in looking for opportunities to use the project planning process to improve the performance of CERP. This task will be shared equally between SFWMD and USACE.

Document regional benefits of the SGGE Restoration Project. - RECOVER will review alternative plans for the SGGE Restoration Project. If a hydrologic model is not available or appropriate for the project, the RECOVER analysis will consist of the team's best professional judgement of whether the alternative is consistent with the Comprehensive Plan.

RECOVER will suggest improvements, if needed, and work with the PDT as necessary to optimize the performance of the recommended project to provide maximum benefits to the regional system.

Issue Resolution - If the PDT selects a plan that does not achieve the performance predicted by CERP, the RECOVER co-chairs will organize an ad hoc team to attempt to resolve the issue, following an agreed-upon issue resolution process. The ad-hoc team may be made up of members of the PDT, RECOVER, and additional expertise as needed. This task will be shared equally between SFWMD and USACE.

RECOVER PIR Reports - All RECOVER interactions with PDT will be documented in written format. A final RECOVER report will document how the PDT's recommended plan is predicted to influence the system-wide performance of CERP. This report will also document any changes that occurred during the project formulation and design as a result of the system-wide evaluations, and any action that may be necessary to amend the Comprehensive Plan. This task will be shared equally between SFWMD and USACE.

11. Project Cooperation Agreement

During the development of the Project Implementation, the Corps and the SFWMD will develop a draft Project Cooperation Agreement. Upon finalizing the Project Implementation Report, which will be forwarded as the project decision document for Congressional a draft Project Cooperation Agreement package will be prepared. In accordance with Engineer Regulation 1105-2-100, this package will consist of a draft Project Cooperation Agreement, a statement of financial capability (an assessment of SFWMD's ability to fund its share of the project costs), and a letter of support from the SFWMD. Project managers assigned to the Corps' Jacksonville District's Programs and Project Management Division will compile and coordinate review of the draft Project Cooperation Agreement package. The draft Project Cooperation Agreement package will be submitted to the Corps' South Atlantic Division, Corps' Headquarters and the Assistant Secretary of the Army for Civil Works. The final Project Cooperation Agreement will then be returned to the Jacksonville District for signing by the SFWMD. The signed Project Cooperation Agreement will be transmitted to the Assistant Secretary of the Army for Civil Works for final signatures.

12. Project Closeout Procedures

After final inspection and acceptance of the project, property transfer documents will be prepared to transfer the completed works to the SFWMD as the non-federal sponsor. These documents will identify the completed works, any associated items such as O&M manuals that will accompany the works, any outstanding deficiencies, any remaining warranties, and the effective date of the transfer. This will occur as soon as practical following completion of construction of the project. The Corps will process documents such as the final pay estimate and contractor evaluation required for closing the applicable

construction contract. Cost of the operations and maintenance of each completed functional project segment will be borne according to the provisions of the PCA unless superceded by changes in applicable federal law.

The Corps will also review the report of audit done on the sponsor's records for all project costs to be applied as credits. The sponsor may likewise review the audit of Corps' records to ascertain the completeness and validity of expenditures. Based upon final accounting of all project costs, the final apportionment of project costs between the Federal government and the local sponsor will be made in accordance with the stipulations of the PCA. Following final adjustments, any excess funds contributed by the SFWMD will be returned to the sponsor and the letter of credit or escrow account will be terminated.

13. List of Project Management Plan Preparers

USACE/SFWMD Members of the Project Delivery Team

The following individuals from the USACE and the SFWMD will comprise the core working group for expediting the pilot project:

Individual	Organization	Responsibility
Major John Chaput	USACE, DP-R	Project Manager
Tiphanie Jinks	USACE, PD-P	Planning Tech Leader
Dave Weston	USACE, EN-HH	Engineer Tech Leader
Brian Cornwell	USACE, EN- HI	Hydraulic Investigation
Anne Fore	USACE, EN-C	Cost Engineer
Bob Henderson	USACE, EN-DL	Engineer Design
Luis Alejandro	USACE, EN-HW	Water Management
Mike Choate	USACE, EN-HI	Hydraulic Investigation
Bob Bullock	USACE, EN-VE	Value Engineering
Curt Thompson	USACE, DP-C	Public Inv/ Env. Justice
Lynn Hichborn	USACE, RE-A	Real Estate Acquisition
Carl Pettijohn	USACE, CO-CS	Construction Services
John Kremer	USACE, PD-ES	Environmental Studies
Jim McAdams	USACE, PD-EE	Environmental Quality
Candida Koenig	USACE, EN-GS	Geotechnical Studies
Brent Trauger	USACE, EN-DS	Design Structures
Claudia Hundley	USACE, CT-C	Construction
Bill Hunt	USACE, PD-D	Socio-Economic
John Pax	USACE, OC	Counsel

USACE/SFWMD Members of the Project Delivery Team (Cont.)

Ananta Nath	SFWMD	Project Manager
Clarence Tears	SFWMD	Dir, Big Cypress Basin
Dr. Mike Duever	SFWMD	Senior Env Scientist
Robert Laura	SFWMD	Lead Engineer
Cecelia Weaver	SFWMD	Senior Env Scientist
Kent Feng	SFWMD	Senior Engineer
Dr. Shabbir Ahmed	SFWMD	Senior Engineer
Andy Potts	SFWMD	Senior Engineering Assc.

Project Team Members from Inter-Agency Technical committee are:

Federal

Bruce Boler	US EPA
Dr. James Burch	NPS
Kim Dryden	USF & WLS
Rosalind More	USDA NRCS

State

Dr. Sherry Brandt-Williams	DEP
John Outland	DEP
Jim Beever	F & WLCC
Sonja Durrwachter	DOF
Dr. Mike Savarese	FGCU

14. Summary of Work-In-Kind Services

The Design Agreement allows for In-Kind services by the local sponsor – in this case SFWMD. A listing of In–Kind services is provided below. SFWMD has contracted work since April 1999 with U.S. Natural Resources Conservation Service (NRCS) and Florida Division of Forestry (FDOF). The NRCS has a $115,395 contract to provide soils, vegetation, topographic surveys, and a GIS database, and the FDOF has a $40,000 contract to provide a wildlife survey (Table 2).

Table 2. Summary of Work-In-Kind Services

	Non-Federal In-kind
Contracted Work	$155,395
PMP and PIR Development	$267,200
Design	$200,000
Land	$79,129,149
Totals	$79,751,744

15. Reference Documents

Documents:

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Wang, John D. and Joan Browder. "Canal Discharge Impacts on Faka Union Bay." In Hydraulics and Hydrology in the Small Computer Age, Vol. 1, Ed. Waldrop, W.R. American Society of Civil Engineers, New York, New York, 10017-2398, pp. 141-146.

16. Summary of Changes

There have not been any changes to the Project Management Plan.

APPENDICES

Appendix A
Project Maps

This section is reserved for maps and figures that will augment those presented in earlier sections of this PMP.

Appendix B
Work Breakdown Structure

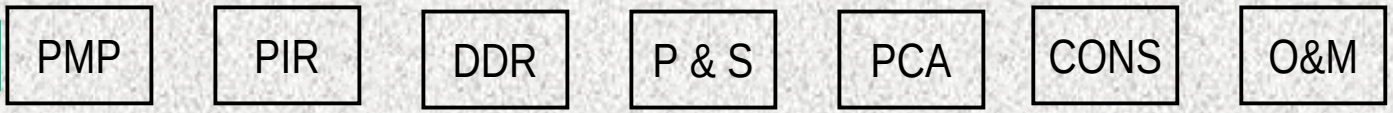
This section is reserved for correspondences regarding the project phases, tasks, and subtasks. The current WBS is provided herein.

Work Breakdown Structure - SGGE

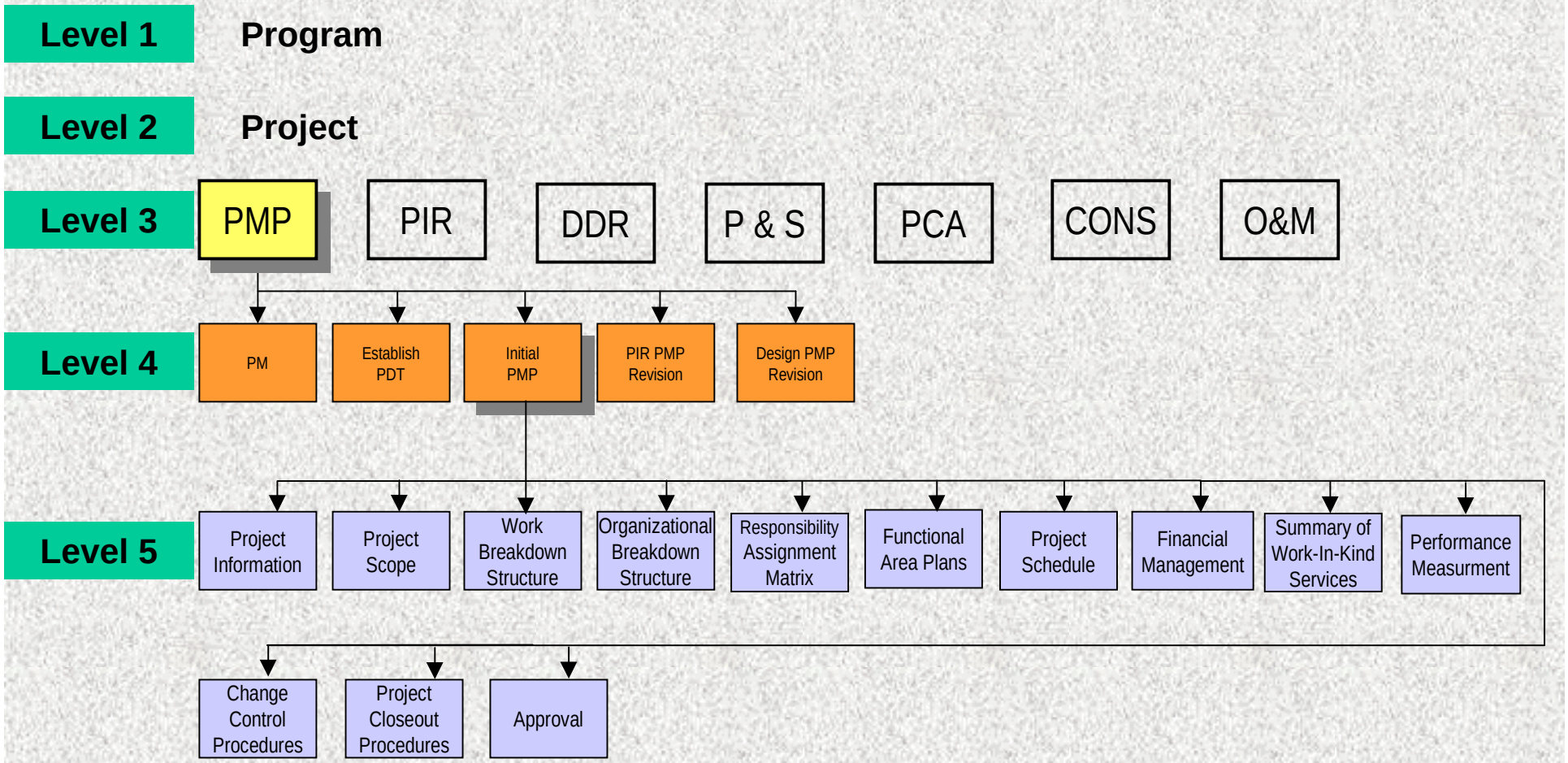
Level 1 **Program**

Level 2 **Project**

Level 3



Work Breakdown Structure - SGGE

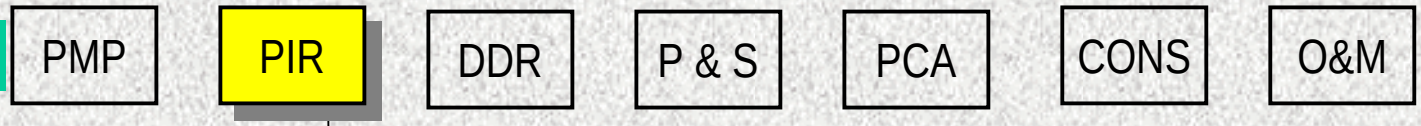


Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3



Level 4

Work Breakdown Structure - SGGE

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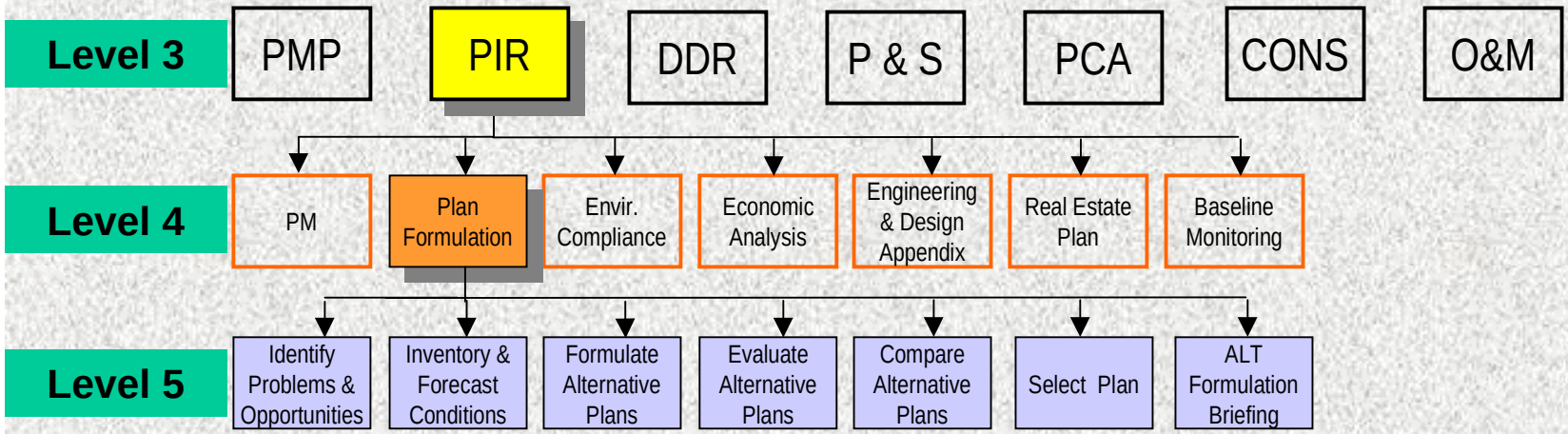
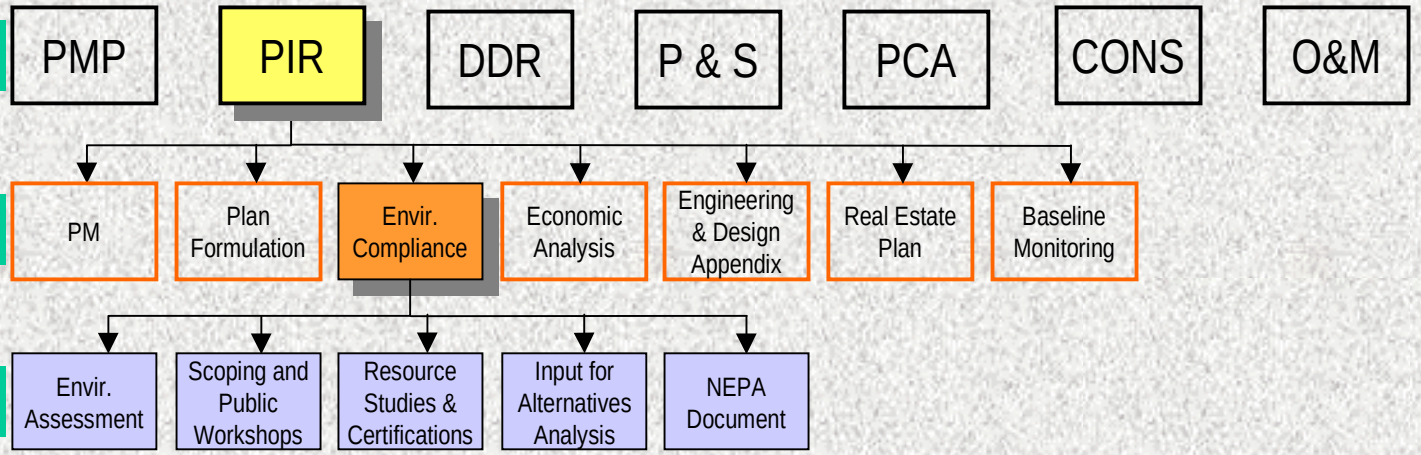
Level 2 **Project**



Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

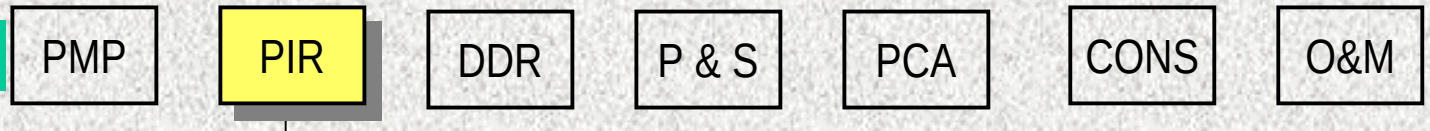


Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3



Level 4

Level 5

Work Breakdown Structure -SGGE

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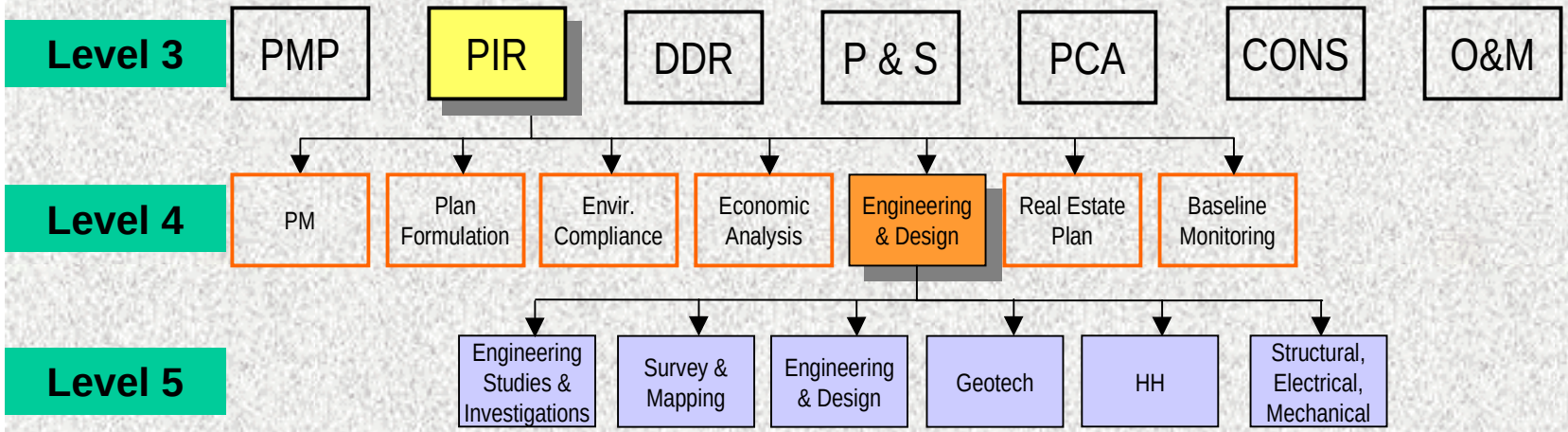
Level 2 **Project**

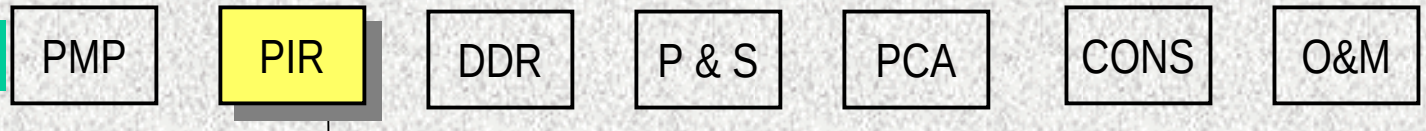


Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3



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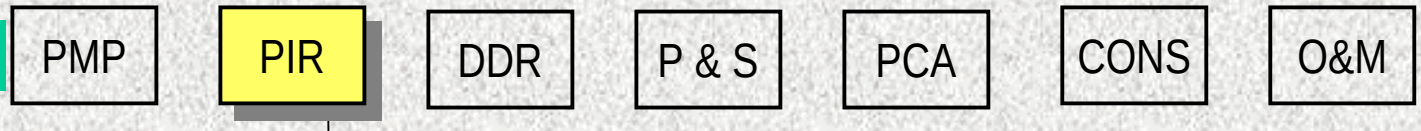
Level 5

Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3



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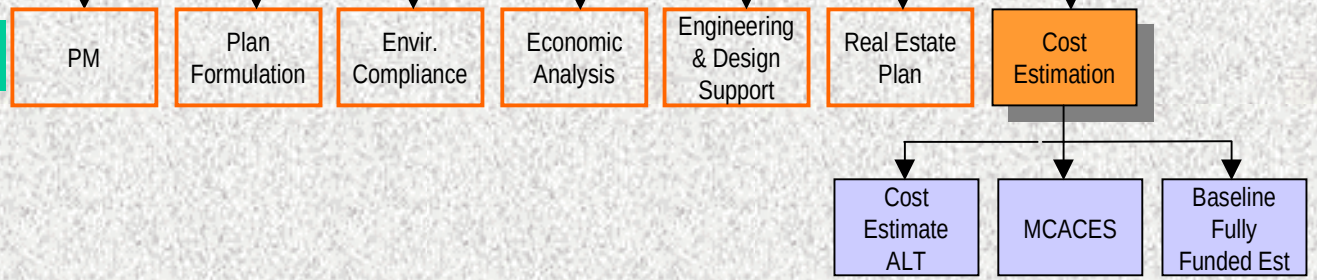
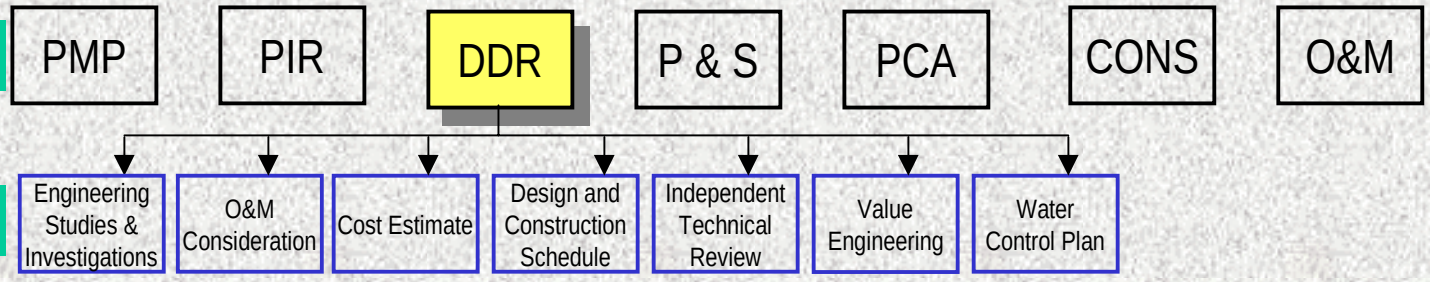


Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3



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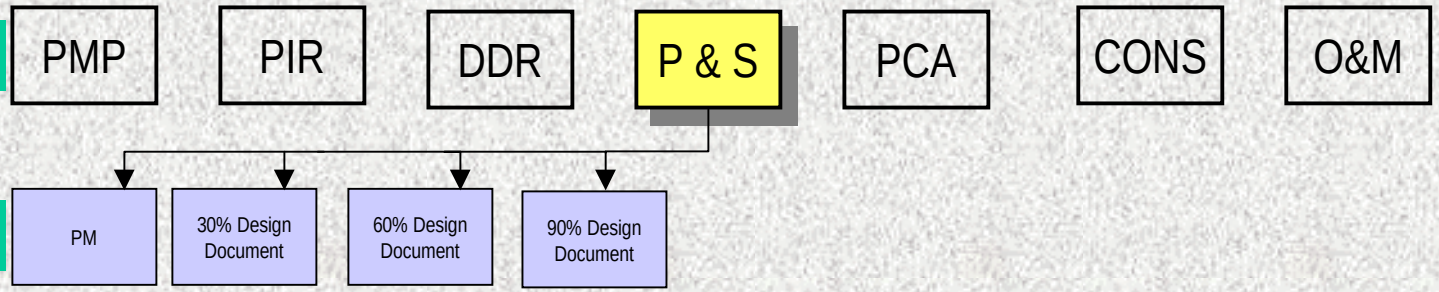
Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3



Level 4

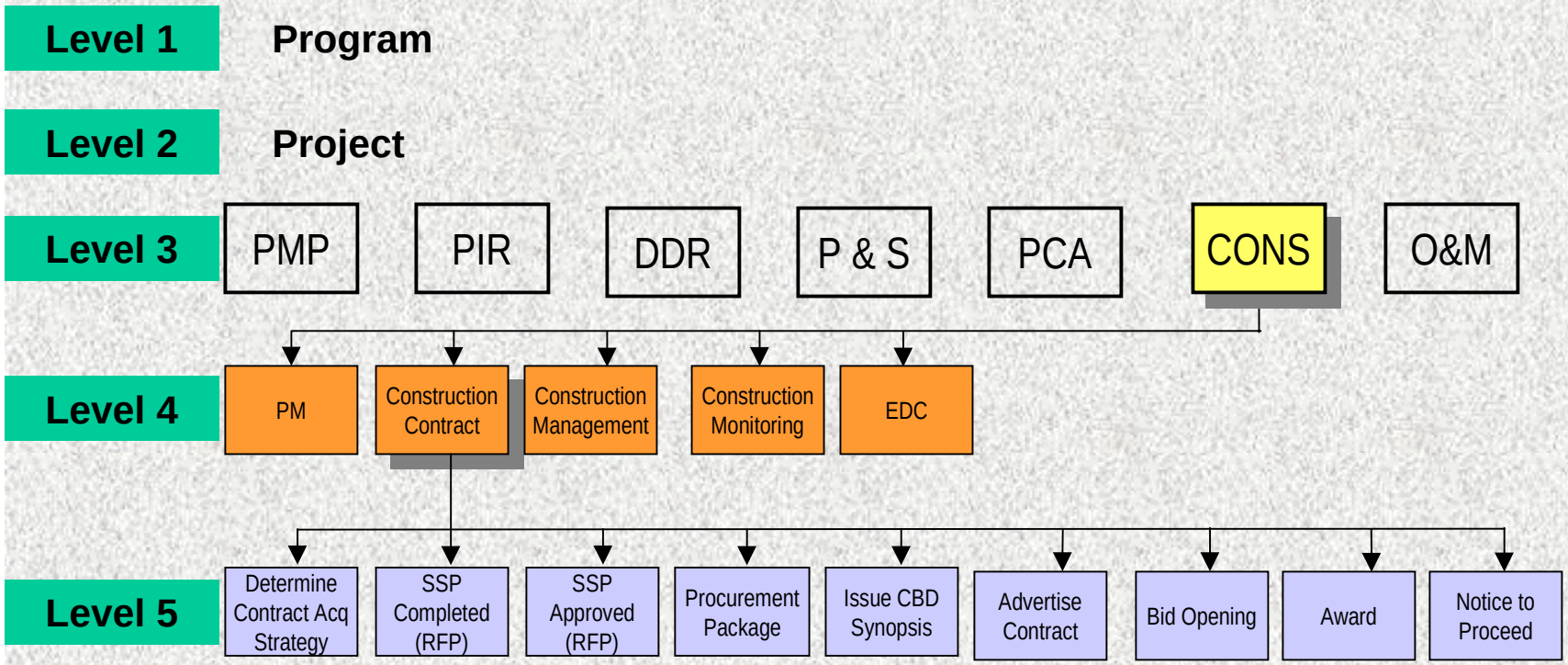
Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3 PMP | PIR | DDR | P & S | PCA | CONS | O&M

Work Breakdown Structure - SGGE



Work Breakdown Structure - SGGE

Level 1 **Program**

Level 2 **Project**

Level 3

Level 4

Appendix C
Organization Breakdown Structure

The current organizational breakdown structure is provided herein.

Organization Breakdown Structure

The Organization Breakdown Structure (OBS) identifies the organizations within the Corps of Engineers responsible for performing work required for project implementation. Office titles and symbols of organizations that will participate in the project are listed below:

JACKSONVILLE DISTRICT

PROJECT MANAGEMENT

DP Deputy District Engineer for Programs and Project Management
DP-A Principal Assistant DDE(PM)
DP-I Project Management Branch

CONSTRUCTION DIVISION

CO Construction Division
CO-C Construction Branch
CO-CC Contract Administration
CO-CQ Quality Assurance Section
CO-CS Construction Services Section
C0-M Emergency Management
CO-S South Florida Area Office

CONTRACTING DIVISION

CT Chief, Contracting Division
CT-C AE and Construction Branch
CT-S Services Branch

ENGINEERING DIVISION

COST ENGINEERING BRANCH
EN-C Cost Engineering Branch

DESIGN BRANCH
EN-D Design Branch
EN-DC Specifications Section
EN-DL Levees and Waterway Section

EN-DM Mechanical & Electrical Section
EN-DS Structures Section
EN-DP Special Projects Section
EN-DT Survey Section

GEOTECHNICAL BRANCH
EN-G Geotechnical Branch
EN-GS Soils Section
EN-GG Geology and Exploration Section

HYDROLOGY AND HYDRAULICS BRANCH
EN-H Hydrology & Hydraulics Branch
EN-HC Coastal Design Section
EN-HH Hydraulic Data and Design Section
EN-HI Hydrologic Investigation Section
EN-HW Meteorology & Operations Section

ENGINEERING TECHNICAL SERVICES BRANCH
EN-T Technical Services Branch

SAJ-VE VALUE ENGINEERING OFFICER

PLANNING DIVISION

ENVIRONMENTAL BRANCH
PD-EE Environmental Quality Section
PD-ER Environmental Coordination Section
PD-ES Environmental Studies Section

PD-D SOCIO-ECONOMICS BRANCH

PLAN FORMULATION BRANCH
PD-PC Coastal
PD-PN Navigation
PD-PF Flood Control

REAL ESTATE DIVISION

RE Real Estate Division
RE-A Acquisition Branch
RE-S Appraisal Branch

OFFICE OF COUNSEL

OC OFFICE OF COUNSEL

OTHER ARMY & CORPS OF ENGINEERS OFFICES

SAD South Atlantic Division
HQ Headquarters, US Corps of Engineers
ASA/CW Assistant Secretary of the Army for Civil Works

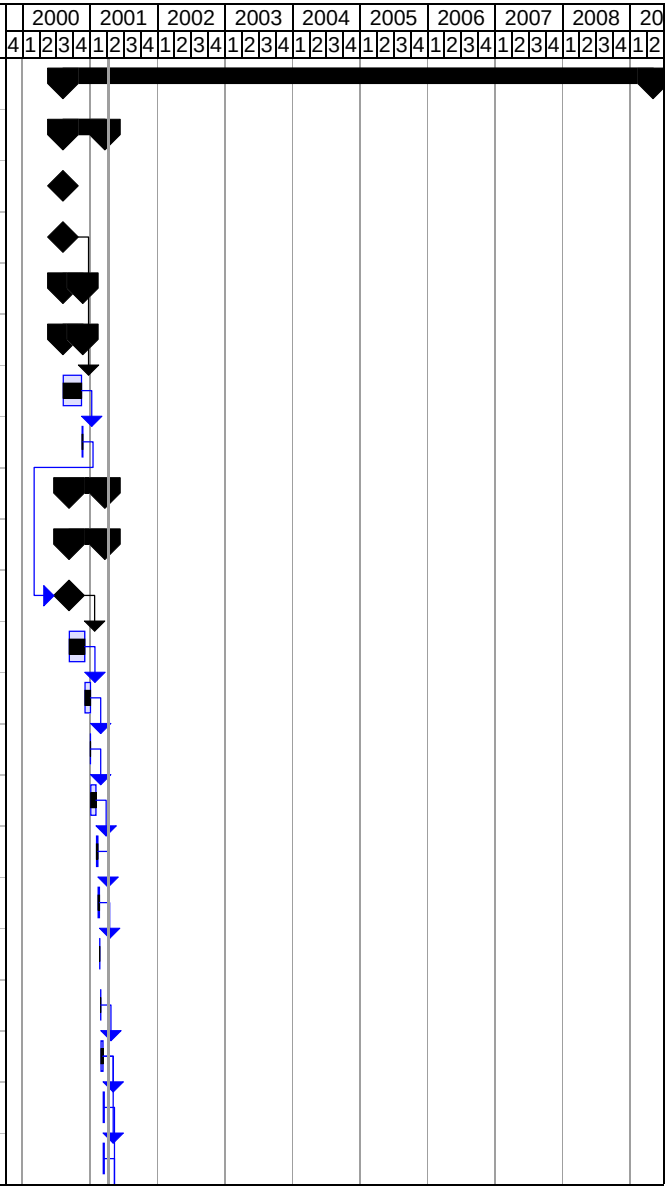
OTHER FEDERAL AGENCIES

USGS US Geologic Survey
USFWS US Fish and Wildlife Service
USEPA US Environmental Protection Agency

Appendix D
Project Schedule

A copy of the project schedule is contained herein.

ID	Task Name	Dur	Start	Finish
1	**CERP: Southern Golden Gate Estates**	**2193 d**	**Thu 8/10/00**	**Thu 5/7/09**
2	**PED Cost Sharing Agreement**	**154 d**	**Thu 8/10/00**	**Fri 3/23/01**
3	**Executed PED Agreement**	**0 d**	**Thu 8/10/00**	**Thu 8/10/00**
4	Executed PED Agreement	0 d	Thu 8/10/00	Thu 8/10/00
5	**Master Project Management Plan (MPMP)**	**73 d**	**Thu 8/10/00**	**Fri 11/24/00**
6	**Final MPMP**	**73 d**	**Thu 8/10/00**	**Fri 11/24/00**
7	Final MPMP Signed by SFWMD	69 d	Thu 8/10/00	Fri 11/17/00
8	Final MPMP Signed by COE	4 d	Mon 11/20/00	Fri 11/24/00
9	**Project Management Plan (PMP)**	**132 d**	**Tue 9/12/00**	**Fri 3/23/01**
10	**Final PMP**	**132 d**	**Tue 9/12/00**	**Fri 3/23/01**
11	PMP Initiated	0 d	Tue 9/12/00	Tue 9/12/00
12	Project Delivery Team	57 d	Tue 9/12/00	Mon 12/4/00
13	Initial Draft PMP	21 d	Tue 12/5/00	Thu 1/4/01
14	PDT Mtg.	1 d	Thu 1/4/01	Thu 1/4/01
15	Draft PMP	20 d	Fri 1/5/01	Fri 2/2/01
16	DCT Review of Draft PMP	7 d	Mon 2/5/01	Tue 2/13/01
17	Draft PMP	6 d	Wed 2/14/01	Thu 2/22/01
18	Review and discuss PMP at CRG Meeting	1 d	Fri 2/23/01	Fri 2/23/01
19	Big Basin Board (Public Meeting)	1 d	Wed 2/28/01	Wed 2/28/01
20	Final PMP	9 d	Thu 3/1/01	Tue 3/13/01
21	SFWMD Review PMP	5 d	Wed 3/14/01	Tue 3/20/01
22	COE Project Review	5 d	Wed 3/14/01	Tue 3/20/01



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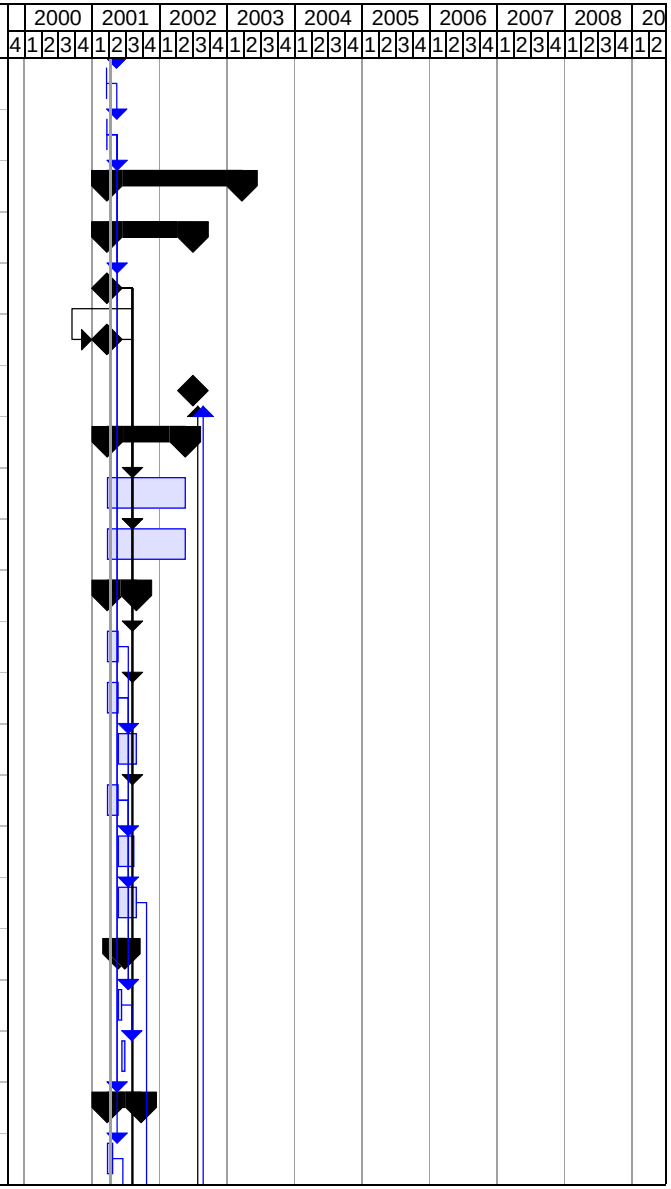
ID	Task Name	Dur	Start	Finish
23	Final Approval by SFWMD Executive Director	2 d	Wed 3/21/01	Thu 3/22/01
24	Approved By Corps PRB	1 d	Fri 3/23/01	Fri 3/23/01
25	**Project Implementation Report Phase**	**501 d**	**Fri 3/23/01**	**Mon 3/24/03**
26	**Funds Control**	**321 d**	**Fri 3/23/01**	**Tue 7/2/02**
27	Study Funds Control (Initiate PIR)	0 d	Fri 3/23/01	Fri 3/23/01
28	Sponsor In-Kind Contributions	0 d	Fri 3/23/01	Fri 3/23/01
29	Project Authorization	0 d	Tue 7/2/02	Tue 7/2/02
30	**Project Implementation Report**	**292 d**	**Mon 3/26/01**	**Tue 5/21/02**
31	Coordinate Study Effort	292 d	Mon 3/26/01	Tue 5/21/02
32	Public Involvement / Meetings	292 d	Mon 3/26/01	Tue 5/21/02
33	**Engineering & Design Studies**	**112 d**	**Mon 3/26/01**	**Thu 8/30/01**
34	Surveys and Mapping, Except for RE	42 d	Mon 3/26/01	Tue 5/22/01
35	Geotechnical Studies	42 d	Mon 3/26/01	Tue 5/22/01
36	Geotechnical Design Work	70 d	Wed 5/23/01	Thu 8/30/01
37	Hydrology and Hydraulic Studies	42 d	Mon 3/26/01	Tue 5/22/01
38	Hydrology and Hydraulic Design Work	60 d	Wed 5/23/01	Thu 8/16/01
39	Engineering and Design Analysis	70 d	Wed 5/23/01	Thu 8/30/01
40	**Socioeconomic Studies**	**26 d**	**Wed 5/23/01**	**Thu 6/28/01**
41	Economic Analysis	13 d	Wed 5/23/01	Mon 6/11/01
42	Financial Analysis	13 d	Tue 6/12/01	Thu 6/28/01
43	**Planning Studies**	**128 d**	**Mon 3/26/01**	**Mon 9/24/01**
44	Identifying Problems and Opportunities	21 d	Mon 3/26/01	Mon 4/23/01



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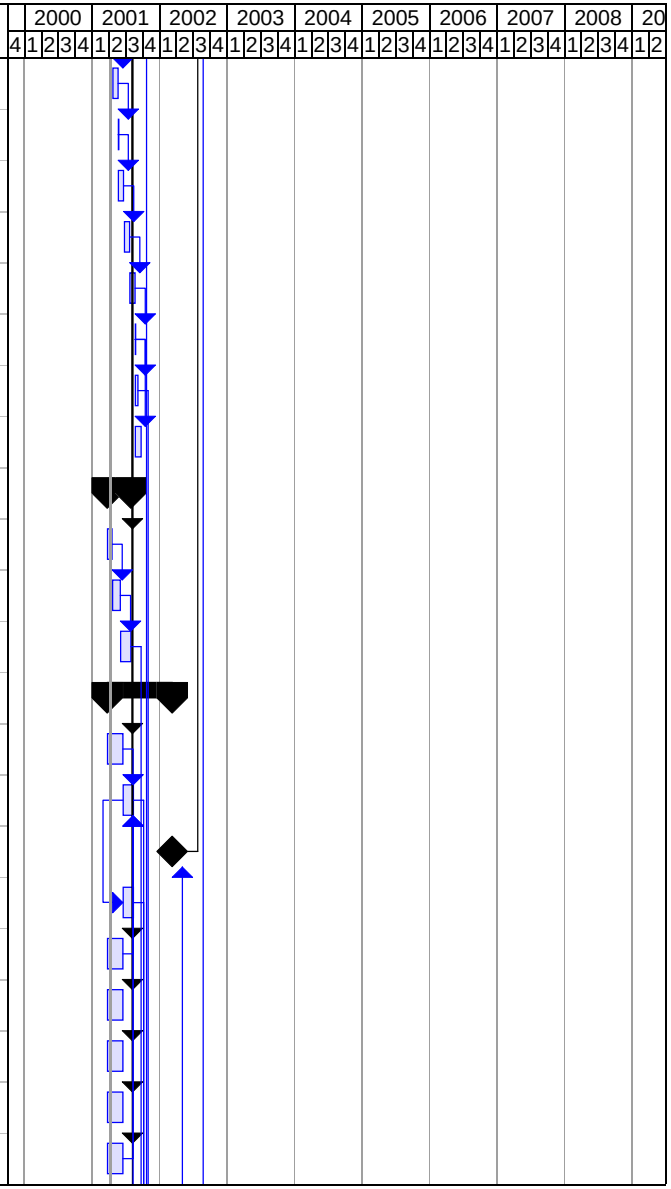
ID	Task Name	Dur	Start	Finish
45	Inventorying and forecasting conditions	21 d	Tue 4/24/01	Tue 5/22/01
46	SAD Briefing on project without conditions	1 d	Wed 5/23/01	Wed 5/23/01
47	Formulation Alternative Plans	21 d	Thu 5/24/01	Fri 6/22/01
48	Evaluationg Alternative Plans	21 d	Mon 6/25/01	Tue 7/24/01
49	comparing Alternative Plans	21 d	Wed 7/25/01	Wed 8/22/01
50	Alternative Formulation Briefing (Tenetive Sel Plan)	1 d	Thu 8/23/01	Thu 8/23/01
51	AFB Guidance Memorandum	10 d	Fri 8/24/01	Fri 9/7/01
52	Selecting a Plan	21 d	Fri 8/24/01	Mon 9/24/01
53	**Real Estate Analyses**	**90 d**	**Mon 3/26/01**	**Tue 7/31/01**
54	Rights of Entry	20 d	Mon 3/26/01	Fri 4/20/01
55	Preliminary Real Estate Acquisition Maps	30 d	Mon 4/23/01	Mon 6/4/01
56	Gross Appraisal	40 d	Tue 6/5/01	Tue 7/31/01
57	**Environmental Studies / NEPA**	**241 d**	**Mon 3/26/01**	**Mon 3/11/02**
58	Environmental Assessment (EA)	60 d	Mon 3/26/01	Mon 6/18/01
59	Coordination with Other Agencies / Work Shops	40 d	Tue 6/19/01	Tue 8/14/01
60	Record of Decision (ROD) or FONSI	0 d	Mon 3/11/02	Mon 3/11/02
61	Coastal Zone Management Consistency Concurrence	40 d	Tue 6/19/01	Tue 8/14/01
62	Fish and Wildlife Coordination Act Report	60 d	Mon 3/26/01	Mon 6/18/01
63	Essential Fish Habitat Evaluation	60 d	Mon 3/26/01	Mon 6/18/01
64	Surveys (Wading Bird)	60 d	Mon 3/26/01	Mon 6/18/01
65	Water Quality	60 d	Mon 3/26/01	Mon 6/18/01
66	HTRW Studies	60 d	Mon 3/26/01	Mon 6/18/01



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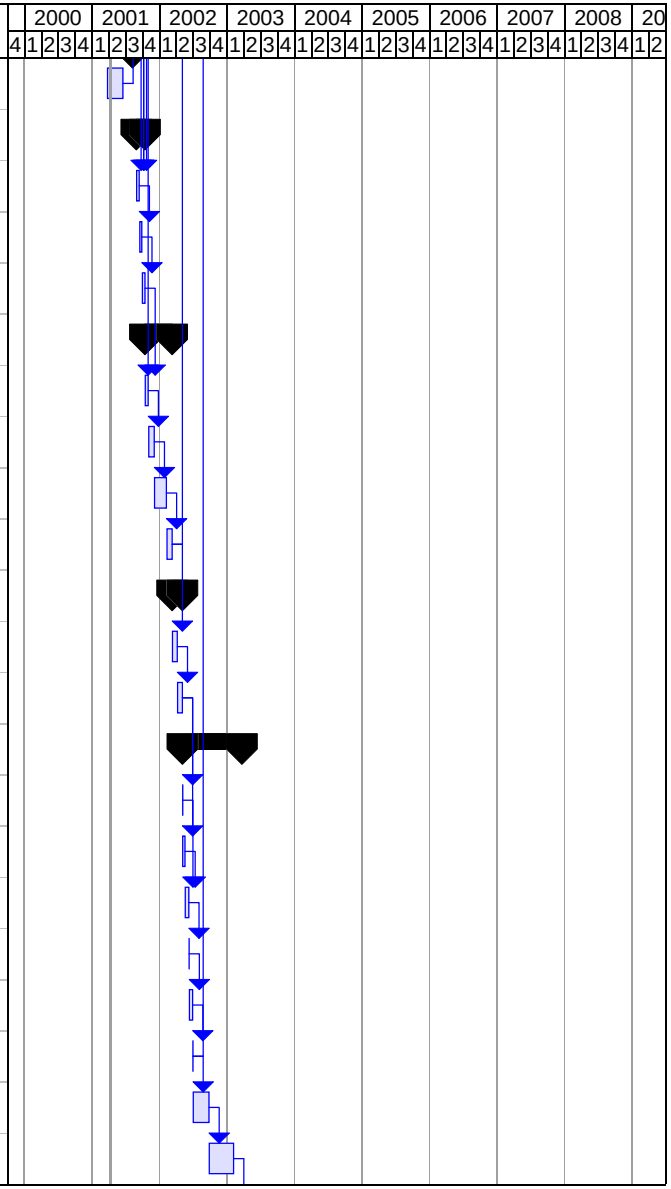
ID	Task Name	Dur	Start	Finish
67	Cultural Resource Studies	60 d	Mon 3/26/01	Mon 6/18/01
68	**Cost Estimates**	**30 d**	**Fri 8/31/01**	**Mon 10/15/01**
69	Cost Estimate for Alternatives	10 d	Fri 8/31/01	Fri 9/14/01
70	Project Cost Estimate (MCACES)	10 d	Mon 9/17/01	Fri 9/28/01
71	Baseline Fully Funded Cost Estimate	10 d	Mon 10/1/01	Mon 10/15/01
72	**Draft Report**	**99 d**	**Tue 10/16/01**	**Mon 3/11/02**
73	Technical Review (ITR)	14 d	Tue 10/16/01	Fri 11/2/01
74	Draft Proj Impl Report and NEPA	20 d	Mon 11/5/01	Tue 12/4/01
75	Public Review / Coordination	45 d	Wed 12/5/01	Fri 2/8/02
76	State & Agency Review and NEPA Filing Letter	20 d	Mon 2/11/02	Mon 3/11/02
77	**Final Report**	**40 d**	**Tue 3/12/02**	**Mon 5/6/02**
78	Final Project Implementation Report & NEPA	20 d	Tue 3/12/02	Mon 4/8/02
79	Division Commanders Notice	20 d	Tue 4/9/02	Mon 5/6/02
80	**Washington Level Report Approval**	**220 d**	**Tue 5/7/02**	**Mon 3/24/03**
81	ASA(CW) Memorandum to OMB	1 d	Tue 5/7/02	Tue 5/7/02
82	Policy Compliance Review	10 d	Tue 5/7/02	Mon 5/20/02
83	Chief's Report	14 d	Tue 5/21/02	Mon 6/10/02
84	OMB Letter to ASA(CW)	1 d	Tue 6/11/02	Tue 6/11/02
85	Chief of Engineer's Report	14 d	Wed 6/12/02	Mon 7/1/02
86	ASA(CW) Transmittal to Congress	1 d	Tue 7/2/02	Tue 7/2/02
87	Washing Level Approved Report	60 d	Wed 7/3/02	Thu 9/26/02
88	Congressional Authorization	90 d	Fri 9/27/02	Fri 2/7/03



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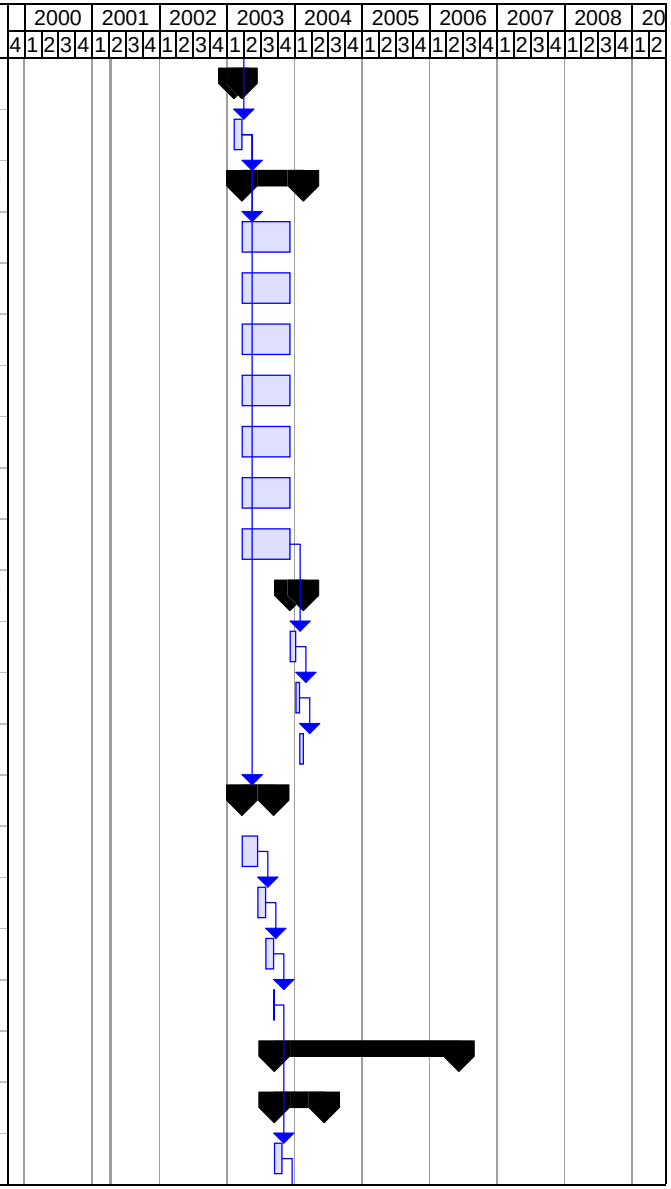
ID	Task Name	Dur	Start	Finish
89	**Updates of PMP**	**30 d**	**Mon 2/10/03**	**Mon 3/24/03**
90	PMP Update	30 d	Mon 2/10/03	Mon 3/24/03
91	**DESIGN DOCUMENTATION REPORT (DDR)**	**228 d**	**Tue 3/25/03**	**Thu 2/19/04**
92	Engineering Studies & Investigation	180 d	Tue 3/25/03	Tue 12/9/03
93	O&M Considerations	180 d	Tue 3/25/03	Tue 12/9/03
94	Cost Estimate	180 d	Tue 3/25/03	Tue 12/9/03
95	Design & Const Schedule	180 d	Tue 3/25/03	Tue 12/9/03
96	Independent Tech Review	180 d	Tue 3/25/03	Tue 12/9/03
97	Value Engineering	180 d	Tue 3/25/03	Tue 12/9/03
98	Water Control	180 d	Tue 3/25/03	Tue 12/9/03
99	**Report Preparation DDR**	**48 d**	**Wed 12/10/03**	**Thu 2/19/04**
100	In-House Review	20 d	Wed 12/10/03	Thu 1/8/04
101	Public Review	14 d	Fri 1/9/04	Thu 1/29/04
102	Review Conference (ITR)	14 d	Fri 1/30/04	Thu 2/19/04
103	**PLANS AND SPECIFICATIONS (P&S)**	**120 d**	**Tue 3/25/03**	**Thu 9/11/03**
104	30% Design Document	60 d	Tue 3/25/03	Tue 6/17/03
105	60% Design Document	30 d	Wed 6/18/03	Wed 7/30/03
106	90% Design Document	30 d	Thu 7/31/03	Thu 9/11/03
107	PCA	1 d	Fri 9/12/03	Fri 9/12/03
108	**CONSTRUCTION**	**687 d**	**Mon 9/15/03**	**Fri 6/9/06**
109	**Construction Contract**	**187 d**	**Mon 9/15/03**	**Fri 6/11/04**
110	Determine Contract Acquisition Strategy	30 d	Mon 9/15/03	Mon 10/27/03



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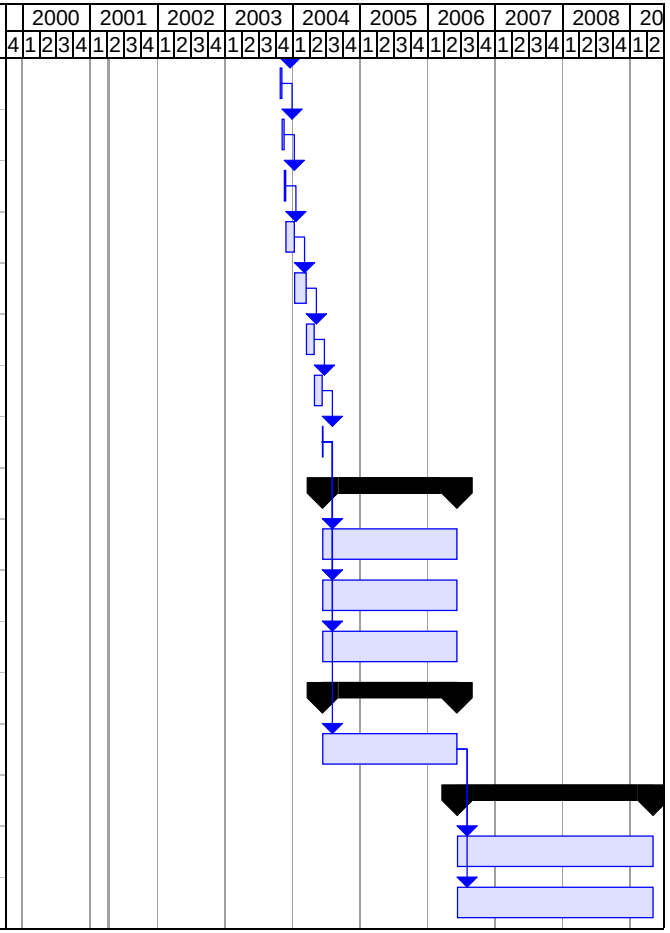
ID	Task Name	Dur	Start	Finish
111	SSP Completed (for RFP Strategy)	7 d	Tue 10/28/03	Wed 11/5/03
112	SSP Approved (for RFP Strategy)	7 d	Thu 11/6/03	Mon 11/17/03
113	Procurement Package to CT-C	7 d	Tue 11/18/03	Wed 11/26/03
114	Issue CBD Synopsis	30 d	Fri 11/28/03	Mon 1/12/04
115	Advertise (IFB) Contract (or RFP)	45 d	Tue 1/13/04	Wed 3/17/04
116	Bid Opening (or Proposals Due)	30 d	Thu 3/18/04	Wed 4/28/04
117	Award Contract	30 d	Thu 4/29/04	Thu 6/10/04
118	Notice to Proceed	1 d	Fri 6/11/04	Fri 6/11/04
119	**Construction Management**	**500 d**	**Mon 6/14/04**	**Fri 6/9/06**
120	Area Office S&I	500 d	Mon 6/14/04	Fri 6/9/06
121	District Office S&A	500 d	Mon 6/14/04	Fri 6/9/06
122	Technical Management S&A	500 d	Mon 6/14/04	Fri 6/9/06
123	**Engineering and Design During Construction**	**500 d**	**Mon 6/14/04**	**Fri 6/9/06**
124	Engineering and Design During Construction	500 d	Mon 6/14/04	Fri 6/9/06
125	**O&M**	**730 d**	**Mon 6/12/06**	**Thu 5/7/09**
126	Maintenance	730 d	Mon 6/12/06	Thu 5/7/09
127	Long Term Monitoring	730 d	Mon 6/12/06	Thu 5/7/09



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Appendix E
Project Cost Estimate

A copy of the Project Cost Estimate is contained herein.

Southern Golden Gate Estates

Project Cost Estimate

Project/FY	Total Cost	Federal Contribution to LERRD	Non-Federal LERRD	Scheduled Planning, Engr. & Design	Projected Construction Costs	S& A Costs	Non-Federal In-Kind Work	Other Federal Agencies	Federal Cash
Southern Golden Gate Estates									
April 1999	$58,514	$0	$0	$0	$0	$0	$29,257	$29,257	$0
00	$117,026	$0	$0	$0	$0	$0	$58,513	$58,513	$0
01	$3,032,663	$0	$0	$2,719,213	$0	$0	$285,825	$27,625	$2,461,013
02	$100,900	$0	$0	$51,900	$0	$0	$49,000	$0	$2,900
03	$2,510,000	$0	$0	$2,310,000	$0	$0	$200,000	$0	$2,110,000
04	$120,793,374	$38,000,000	$79,129,149	$100,000	$3,285,000	$279,225	$0	$0	$3,664,225
05	$8,910,563	$0	$0	$0	$8,212,500	$698,063	$0	$0	$8,910,563
06	$1,782,113	$0	$0	$0	$1,642,500	$139,613	$0	$0	$1,782,113
Total	$137,305,152	$38,000,000	$79,129,149	$5,181,113	$13,140,000	$1,116,900	$622,595	$115,395	$18,930,813

TOTAL COSTS = LERRD + PED + CONST COST + S&A +NON FED WORK IN KIND

S&A = CONST COST * 0.085

FED CASH = PED + CONST COST + S&A -NON FED WORK IN KIND

NON-FED RESPONSIBILITY = (PED + CONST COST + S&A)/2 - (NON FED WORK IN KIND)

FED RESPONSIBILITY = (PED + CONST COST + S&A+ OTHER FED AGENCIES) - (NON FED WORK IN KIND)

Appendix F
Project Funding Requirements

This section is reserved for project funding documents that will become available as the project progresses.

Appendix G
Reporting

This section is reserved for standard reporting forms that will be developed as the project progresses.

Appendix H
Resource Allocation Plan

This section is reserved for the Resource Allocation Plan, a copy of which is provided herein.

Resource Allocation Plan- PMP and PIR Phases

Task No.	Task	Total Future Cost	SFWMD In-Kind	COE Cash	EN EN-D	EN-G	EN-H	EN-C	EN-T	PD PD-E	PD-D	PD-P	CO CO-C	RE RE-A	CT CT-C	DP DP-R
	Total PMP	**$103,063**	**$13,200**	**$89,863**	**$869**	**$2,840**	**$3,842**	**$1,000**	**$0**	**$14,301**	**$3,604**	**$51,088**	**$1,185**	**$2,244**	**$0**	**$8,890**
1	Study Coordination	$14,250	$3,000	**$11,250**								$8,250			$3,000	
2	Public Involve/Meetings	$29,000	$4,000	**$25,000**								$15,000				$10,000
3	Surveys & Mapping	$1,336,700	$0	**$1,336,700**	$1,335,500									$1,200		
4	Geotechnical Studies	$6,550	$0	**$6,550**		$6,550										
5	Geotechnical Design Work	$138,750	$0	**$138,750**		$138,750										
6	H&H Studies	$50,000	$8,000	**$42,000**			$42,000									
7	H&H Design Work	$345,100	$8,000	**$337,100**			$337,100									
8	Engrg & Design Analysis	$167,000	$2,000	**$165,000**	$165,000											
9	Economic Analysis	$8,000	$2,000	**$6,000**							$6,000					
10	Financial Analysis	$8,000	$2,000	**$6,000**							$6,000					
11	Identify Prob and Oppt	$6,500	$4,000	**$2,500**								$2,500				
12	Inv. And Forecast Cond	$2,500	$0	**$2,500**								$2,500				
13	Formulaton Alt Plans	$57,500	$0	**$57,500**	$40,000			$15,000				$2,500				
14	Evaluation Alt Plans	$2,500	$0	**$2,500**								$2,500				
15	Comparing Alt Plans	$2,500	$0	**$2,500**								$2,500				
16	Alt. Form Brief (AFB)	$8,000	$2,000	**$6,000**								$6,000				
17	AFB Guidance Memo	$3,000	$0	**$3,000**								$3,000				
18	Select Plan	$2,500	$0	**$2,500**								$2,500				
19	Rights of Entry	$6,000	$3,000	**$3,000**										$3,000		
20	**Prel. RE Acquisition Maps	$144,000	$140,000	**$4,000**										$4,000		
21	Gross Appraisal	$10,000	$0	**$10,000**										$10,000		
22	Env. Assessment (EA)	$56,000	$6,000	**$50,000**						$50,000						
23	Agency Coordination	$18,000	$3,000	**$15,000**						$15,000						
24	Rec of Dec (ROD)/FONSI	$0	$0	**$0**												
25	Surveys (Wading Bird)	$50,000	$0	**$50,000**						$50,000						
26	Coastal Zone Consist.	$3,500	$2,000	**$1,500**						$1,500						
27	FWS Coord Act Rep/CAR	$193,000	$3,000	**$190,000**						$190,000						
28	Essential Fish Habitat Eval	$1,500	$0	**$1,500**						$1,500						
29	Water Quality	$30,000	$0	**$30,000**						$30,000						
30	HTRW Studies	$16,000	$1,000	**$15,000**						$15,000						
31	Cult. Resource Studies	$71,000	$1,000	**$70,000**						$70,000						
32	Cost Estimate for Altern.	$29,000	$8,000	**$21,000**				$15,000				$6,000				
33	Proj Cost Est (MCACES)	$18,000	$3,000	**$15,000**				$15,000								
34	Baseline Full-fund cost	$2,000	$1,000	**$1,000**								$1,000				
35	Technical Review (ITR)	$21,800	$5,000	**$16,800**	$1,200	$1,200	$1,200	$1,200	$3,000	$1,200	$1,200	$3,000	$1,200	$1,200	$1,200	
36	Draft PIR and NEPA	$46,000	$20,000	**$26,000**						$6,000		$20,000				
37	HQ Policy Review (FRC)	$1,500	$0	**$1,500**								$1,500				
38	Revised PIR and NEPA	$17,000	$12,000	**$5,000**								$5,000				
39	Proj Guidance Memo/PGM	$0	$0	**$0**												
40	Public Review/Coord.	$6,600	$5,000	**$1,600**								$1,600				
41	State & Agency Review	$0	$0	**$0**												
42	Final PIR & NEPA	$6,000	$6,000	**$0**												

Task No.	Task	Total Future Cost	SFWMD In-Kind	COE Cash	EN EN-D	EN-G	EN-H	EN-C	EN-T	PD PD-E	PD-D	PD-P	CO CO-C	RE RE-A	CT CT-C	DP DP-R
43	Div. Cmdr's Notice	$0	$0	**$0**												
44	ASA(CW) Memo to OMB	$0	$0	**$0**												
45	Policy Compl. Review	$0	$0	**$0**												
46	Chief's Report	$0	$0	**$0**												
47	OMB Letter to ASA (CW)	$0	$0	**$0**												
48	Chief of Engrs Report	$0	$0	**$0**												
49	ASA(CW) Trans to Cong	$0	$0	**$0**												
50	PMP Update	$0	$0	**$0**												
	Total PIR	**$2,935,250**	**$254,000**	**$2,681,250**	**$1,541,700**	**$146,500**	**$380,300**	**$46,200**	**$3,000**	**$430,200**	**$13,200**	**$85,350**	**$1,200**	**$19,400**	**$4,200**	**$10,000**
	Total PMP & PIR	**$3,038,313**	**$267,200**	**$2,771,113**	**$1,542,569**	**$149,340**	**$384,142**	**$47,200**	**$3,000**	**$444,501**	**$16,804**	**$136,438**	**$2,385**	**$21,644**	**$4,200**	**$18,890**

Appendix I
Advance Formulation Plan

The advanced Formulation Plan is presented in Section 9.1 Advance Formulation Planning. This section is reserved for correspondences and changes to the plan that may occur during project implementation.

Appendix J
Engineering and Design Plan

This section is reserved for the Engineering and Design Plan that will be developed as the project progresses.

Appendix K
Construction Management Plan

This section is reserved for Construction Management Plan that will be developed as the project progresses.

Appendix L
Real Estate Plan

This section is reserved for Real Estate Plan that will be developed as the project progresses.

Appendix M
Acquisition Plan

This section is reserved for Acquisition Plan that will be developed as the project progresses.

Appendix N
Quality Control Plan

This section is reserved for the Quality Control Plan, a copy of which is provided herein.

Quality Control Plan

1.0 Purpose

This Quality Control Plan (QCP) presents the policy and specific actions to be implemented on the Southern Golden Gate Estates Hydrologic Restoration Plan to ensure that high quality products are produced on time and within budget.

2.0 Project Description and Scope

See Sections 1.0 and 2.0 of the Project Management Plan

3.0 Plan Objective

The Plan sets forth the review requirements for the Plans and Specifications (P&S) and other engineering and design documents (E&D) developed by the U.S. Army Corps of Engineers (ACOE) and the South Florida Water Management District (SFWMD). There will be an independent technical to review of all P&S and E&D conducted by the SFWMD and ACOE to ensure quality control before completion. The technical review will verify the reasonableness of the results, including whether the products meet the needs consistent with law.

4.0 Internal ACOE Requirements

4.1 Quality Control Manager

The Quality Control Manager (QCM) for the Project shall be responsible for the following quality control activities:

- Maintaining a file of pertinent correspondence and project guidelines.
- Developing a central location to store in house review sets of plans, design calculations, quality computations, reports, specifications etc.
- Monitoring and evaluating the design activities of the Design Team and conduct follow up where necessary.
- Reviewing submittals for completeness and accuracy.
- Document activities relating to quality control and route to all affected parties.

4.2 Appointment of Engineering Division Project Engineer

The Engineering Division Project Engineer (PE) for the preparation of the P&S is the Engineering Division point of contact with the Project Manager and the coordinator of the technical engineering and design support requirements for the project. His responsibilities are:

- Ensuring that the customer requirements are fully understood, those clear accurate criterions are established, and that guidance and direction for the designer is fully documented.
- Coordination of the Engineering Division's work on assigned technical products.
- Closely monitoring progress of the work and costs for technical products against the project schedules.
- Advising the PM of the status periodically, and of all significant developments as they arise.

4.3 Technical Coordination

Team members will meet regularly to coordinate technical efforts between the various disciplines, to discuss and work toward resolving outstanding issues, and to examine work progress and expenditures. These meetings will keep team members updated on the status of the project and any significant developments, as well as encourage a team-building and partnering spirit that will enhance successful completion of a quality product on schedule and within budget.

4.4 Site Visits by Technical Team Members

Trips by the team members will be taken as necessary.

4.5 Project Review Process

Design team members will provide their input for the plans and specifications to the Engineering Division, Design Branch. When all the information for the plan and specifications has been received, Design Branch, Specifications Section will have the project documents reproduced and disseminated for review by the District and Area Offices.

Review comments and actions will be recorded on SAD Form 3058-R or similar form, and maintained in file folders and/or electronically. Forms submitted during the in-house review of the plans and specifications will be maintained by Specifications Section (CESAJ-EN-DC). The project will be reviewed with respect to biddability, constructibility, operability, and environmental compatibility in accordance with ER 415-1-11.

Biddability, Constructibility, Operability, and Environmental (BCOE) Review Meeting. After the review period is completed, a review meeting will be convened by Design Branch, Specifications Section to address the project comments. The Design team members will be present at this meeting along with other concerned Construction, Operations, Engineering, and Project Management personnel.

Design team members shall provide input or make any necessary changes to the contract documents in a timely manner as a result of the BCOE meeting.

4.6 Project Schedule - See Appendix C of the PMP.

5.0 Independent Technical Review for ACOE and SFWMD E&D Products

All engineering and design products including P&S shall have an Independent Technical Review (ITR). The ITR Team shall be established when work has started on a product. The ITR team shall conduct such reviews as necessary to insure that the product is consistent with established criteria, guidance, procedures, and policy. The products produced during the Pre-construction Engineering & Design phase are subject to ITR

The Quality Control Manager for the SFWMD and the ACOE shall ensure that the ITR Teams document their actions and recommendations and furnish the Project Coordination Team (PCT) reports at critical points during project formulation, design, and construction. Independent Technical Review may be conducted within the SFWMD, ACOE, or by contract. Parties involved in the engineering and design may not be members of the ITR team.

A Statement of Legal and Technical Review shall be completed for final products and documents prepared by the ACOE. When the ITR is preformed by contract, appropriate members of the Contractor's staff shall sign the Statement of Legal and Technical Review.

A Sample Guideline for Independent Technical Review (ITR) is included in Appendix G

The ITR Teams shall verify or ensure the following:

- The design conforms to proper criteria.
- The design conforms to plan recommended in the feasibility report.
- Any deviations from criteria or the recommended plan are properly justified.
- Appropriate design methods have been followed.
- The responsible party has completed an internal check of the design and has so indicated on drawings and computation sheets.
- The completed project design is adequately documented.
- The review effort should concentrate primarily on issues related to safety and function of the Project.

5.1 Independent Technical Review Team Members

The review team members will be senior professionals selected by their technical division chief based on the expertise needed for the design. They will not be affiliated with

the development of the design. Their assignment is to confirm the proper application of clearly established criteria, regulations, laws, codes, principles, and professional procedures. The technical review team members will be named during the beginning of the PIR process.

Appendix O
Water Quality and Permitting Plan

This section is reserved for the Water Quality and Permitting Plan that will be developed as the project progresses.

Appendix P
Public Involvement Plan

The Public Involvement Plan is provided in Section 9.8. Additional material generated during this plan, in any, will be included in this appendix.

Appendix Q
Environmental Plan

This section is reserved for the Environmental Plan, a copy of which is provided herein.

Environmental Plan

This appendix is divided into sections. Describing activities required for preparation of the National Environmental Policy Act (NEPA) documents that will be integrated into the Project Implementation Report (PIR). The various activities are associated with different aspects of evaluating the restoration alternatives. The level of detail will be sufficient for use in the development of detailed engineering and designs adequate to obtain congressional authorization for construction.

IMPACT ASSESSMENT

This section includes data collection and evaluation of the environmental character of the study area, and the cost of environmental baseline development and impact assessments. In general, project alternatives will consist of several components to be evaluated, both individually and in combination. Studies will be conducted cooperatively with the U.S. Fish and Wildlife Service (USFWS), National Park Service, Florida Fish and Wildlife Conservation Commission (FWC), Florida Division of Forestry (FDOF), U.S. Environmental Protection Agency (EPA), Florida Department of Environmental Protection (DEP), and National Oceanic and Atmospheric Administration.

All activities will be completed in accordance with the *National Environmental Policy Act (NEPA) of 1969, as amended (91-190)* and the Council on Environmental Quality (CEQ) NEPA regulations *(40 CFR Parts 1500 - 1508)*. The NEPA document will follow the format described in *ER 1105 - 2 - 100* and *ER 200 - 2 - 2*.

Formal coordination with the state will occur at several points during the study to insure consistency with state programs, including the *State Coastal Zone Management Act and Chapter 99-223, Laws of Florida, i.e., The Watershed Management Act*. It is anticipated that coordination will be accomplished by scoping; follow-up letters, and subsequent meetings that will insure state participation in the study process, alternative development, and evaluation. Coordination with the state under the *Clean Water Act (CWA)* will be required if material is placed within a wetland or waters of the United States and/or if plan implementation affects any water bodies that have established Total Maximum Daily Loads (TMDL's), Section 303(d), CWA. The *CWA* requires two actions, a 404(b)(1) evaluation, and state water quality certification.

The following activities are required to conduct the *EPA* impact assessment:

Initiate Scoping - Initiate the necessary coordination with Federal, state, and local agencies and the public, including coordination needed for compliance with the NEPA.

Scoping Workshops - Meet with project partners regarding the scope of the environmental studies. Provide initial opportunities for the public and interested agencies to recommend environmental studies and issues to be addressed in the study efforts.

Prepare/Modify Scope of Work - Add/delete/modify environmental study efforts following comments from the previous activity.

Biological and Field Investigations - A literature search of environmental resources of the area will be conducted. Field investigations of each project site will include inventory of habitats and species occurrence to determine existing conditions. Work will be accomplished in cooperation with the USFWS, FWC, and other appropriate agencies and will be done in conjunction with fieldwork to be performed for the Fish and Wildlife Coordination Act Report (FWCAR).

Review Impact Assessment Models. - Review procedure(s) or models for use in environmental impact assessment. An inventory of the study area attributes and problems will be accomplished and the required attributes of the impact assessment methodology will be determined. An inventory of existing models, as well as models currently under development, will be completed. If appropriate, criteria for a new impact assessment model will be specified.

Select Impact Assessment Method - Meet with the local sponsor, USFWS, and FWC to determine the impact assessment method to be used to evaluate specific environmental responses to project alternatives in the FWCAR.

Initial Assessment - Evaluate project sites and influences according to impact assessment method. All work will be done cooperatively with the USFWS and FWC.

Input for Preliminary Assessment of Alternatives - Conduct analysis to reduce project impacts with USFWS and FWC and provide feed back into project design process.

Biological Assessment - This work will include a review of information on species listed as threatened or endangered that may occur in the study area. A Biological Assessment (BA) will be prepared to address potential impacts to threatened and endangered species. Based on the information provided in the BA, a determination will be made as to whether the proposed action may affect any listed species. If any listed species may be affected, then consultation with the USFWS will be initiated and a Biological Opinion will be requested of the USFWS. No funds are provided to the USFWS for completion of a Biological Opinion.

Coastal Zone Management Evaluation - Obtain technical information needed and complete a Coastal Zone Management Act evaluation, including a determination of consistency in the NEPA document.

Sediment and Water Quality Data Collection and Evaluation – This activity is covered under Section 9.7 Permitting and Appendix O Permitting Plan of this PMP.

HTRW Review and Evaluation – This analysis is covered under a separate section and appendix

.

Aesthetic and Recreation Resource Analysis - An aesthetic and recreation resource analysis will be completed and will include a discussion of existing conditions, a comparative resources analysis of impacts of study alternatives and the selected plan, and a delineation of any mitigation design measures, if needed.

Prepare for In-Progress Review (IPR) - Prepare for and attend IPR meetings. Request USFWS and FWC attendance.

Modify Studies Accordingly - Develop additional environmental studies to reflect IPR review comments.

Additional Environmental Sampling - Conduct additional environmental sampling following the TRC and incorporate into impact assessment analysis.

Input for Final Alternatives - Identify additional beneficial environmental features and include in the final project design.

Preliminary Draft NEPA Documentation - Complete preliminary draft NEPA documentation (integrated with preliminary draft Feasibility Report) and forward to Corps higher authority for review before the Alternatives Formulation Briefing (AFB).

Prepare for Alternatives Formulation Briefing - Ensure environmental personnel attendance at the AFB. Request other Federal and state agencies to attend.

Respond to Higher Authority Comments - Incorporate comments from higher authority review of the preliminary draft Feasibility Report and the AFB into draft NEPA document that is integrated with the draft Feasibility Report.

Draft NEPA document - A draft NEPA document (integrated with the draft Feasibility Report) will be submitted to the EPA, Region IV.

Comment Period for NEPA documentation - Respond to questions from agencies/public during review, respond to questions/inquiries from higher authority, and attend public meetings.

Respond to Comments - Revise the NEPA documentation based on comments received from the public during the comment period.

Final NEPA document - Transmit the final NEPA documentation (integrated with final Feasibility Report) to South Atlantic Division.

ROD - Record of Decision is prepared and signed by Assistant Secretary of the Army for Civil Works.

EXOTIC SPECIES

This section is concerned with management of harmful, non-indigenous plant and animal species in the project area. The 1994 Annual Report of the Interagency Working Group included a review of harmful non-indigenous plants and animals that threaten or impact the south Florida ecosystem. Periodic coordination tasks and meetings are anticipated throughout the PIR study to insure that results (especially concerning recommended alternatives and/or management strategies) are consistent with activities and recommendations of this group. Specific tasks to be accomplished will include the following:

- Finalize and implement the Vegetation Management Plan, whose goal is to control invasive exotics, restore preexisting natural vegetative communities, and restore fire to the system.

- Design the hydrologic restoration to maximize removal of exotics associated with canals, road, and berms.

FIRE MANAGEMENT

This section discusses the use of fire in the management of natural communities. The South Florida Interagency Fire Management Council is a forum for facilitating interactions among south Florida fire managers. They, or another similar group, could provide a valuable format for developing strategies to integrate fire into the PIR, since successful restoration of many components of the natural systems will require an appropriate fire regime.
Periodic coordination tasks and meetings are anticipated throughout the PIR study to insure that study results (especially concerning recommended alternatives and/or management strategies) are consistent with activities and recommendations of this group. Specific tasks to be accomplished will include the following:

- Identify habitat restoration strategies designed to reestablish and maintain appropriate fire regimes in each community type where natural communities are being managed.
- Identify strategies for fuel management and appropriate buffers in developed areas to facilitate application of fire in nearby natural systems.
- Continue to implement Picayune Strand State Forest Fire Management Plan.

FISH AND WILDLIFE STUDIES

Studies will be conducted by the U.S. Fish and Wildlife Service (USFWS) as required by the *Fish and Wildlife Coordination Act of 1958, as amended (PL 85-624)*. This work will include cooperative environmental data collection and evaluation of the environmental character of the study area. The work will be completed in the steps scheduled below.

Initiate USFWS Coordination and Scope of Work - A scope of work with funding levels will be prepared. The USFWS will coordinate with the Corps in review of pertinent literature and performance of field studies needed to evaluate the impacts of considered actions on fish and wildlife resources in order to assist the Corps in assessing project impacts on the environment. Coordination will be initiated by attending scoping meeting(s), reviewing the previous PALs, and preparing an updated feasibility stage PAL which will establish baseline and future "without project" biological resources.

Field Studies - Cooperatively assists in field studies to establish habitat conditions. Site visits will be conducted for obtaining field information and data on specific attributes for study areas. Field studies will be accomplished cooperatively with the Florida Fish and Wildlife Conservation Commission (FWC), USFWS, the Corps, and other appropriate resource agencies or groups to insure consistency and communication between the different elements.

Selection of Environmental Models - Cooperatively assist in the selection of models for impact analysis. Models that will be needed will be determined cooperatively by the USFWS, FWC, South Florida Water Management District (SFWMD), and the Corps. Fish and wildlife resources (e.g., wading birds or alligators) which need to be evaluated will be identified. Models will be reviewed to determine their capabilities and availability is to make the required evaluations.

Evaluation of Alternative Plans - Assist in the analysis and evaluation of projected environmental responses. Based on models and other impact assessment methods, an analysis and evaluation of the different project alternatives will be completed. Recommendations for improvements to project alternatives will be made based on these evaluations. Project alternatives will be ranked according to their benefits to fish and wildlife resources. Recommendations on how to minimize or eliminate any detrimental impacts will also be made.

Draft FWCAR - Complete the draft FWCAR for inclusion into the preliminary draft NEPA document sent to the Corps' higher authority before the AFB. The draft FWCAR will describe future "with project" biological resources and endangered species impacts.

Biological Opinion - Complete the Endangered Species Biological Opinion, if needed, before the AFB.

Revise FWCAR - Modify the draft FWCAR and Endangered Species Biological Opinion, if needed, following the AFB. Send the revised versions for inclusion to the draft NEPA document and draft PIR.

Final FWCAR - Revise the draft Feasibility Report following public and agency review, as needed. Provide the final FWCAR (and Endangered Species Biological Opinion, if needed) for inclusion with the final Project Implementation Report.

CULTURAL RESOURCES

The cultural resources section will include an evaluation of the impacts of the alternatives upon historical, architectural, and archeological resources. All studies will be coordinated with the SHPO in accordance with the *National Historic Preservation Act, as amended (PL 89-665)*, and the *Archeological and Historic Preservation Act, as amended (PL93-291)*. An assessment of the impacts of the proposed project upon cultural resources will be prepared as part of the National Environmental Policy Act analysis. Costs attributable to work under this account include the efforts required to prepare input for the preliminary draft, draft, and final Project Implementation Report, as well as participation in any of the required review conferences and resolution of comments as a result of the conferences.

Initial Assessment – This is an initial archeological assessment, including a cultural resources background literature and records check. Project areas will be visited to determine field conditions.

Scope of Work - Prepare a scope of work for Phase I archeological reconnaissance. It is assumed for purposes of preparing this cost estimate that the Phase I report will be done by a separate contract.

Phase I Investigation - This work activity allows for a Phase I reconnaissance of this area, which the assessment identifies as requiring this level of investigation. This effort will be performed by contract.

Archeological Initial Write-up - The results of the initial archeological assessment will be documented in the preliminary draft PIR.

Archeological Final Write-up - A final write-up specific to the selected alternative(s) will be prepared for inclusion in the PIR.

Appendix R
Value Engineering Plan

This section is reserved for Value Engineering Plan that will be developed as the project progresses.

Appendix S
Water Control Plan

This section is reserved for Water Control Plan that will be developed as the project progresses.

Appendix T
Operation and Maintenance Plan

This section is reserved for the Operation and Maintenance Plan, a copy of which is provided herein.

Operation and Maintenance Plan

1.0 Purpose

This Operations and Maintenance Plan (Plan) presents the policy and specific actions to be adopted for operating and maintaining the project elements after completion of the construction of the project to ensure that the project objectives are accomplished without adverse socio-economic and environmental impacts.

2.0 Project Definition

See Sections 1.0 and 2.0 of the Project Management Plan

3.0 Plan Objective

The Plan sets forth the requirements for Operation, Maintenance, Repair and Rehabilitation (OMR&R) of the structural and nonstructural elements of the project. This will include development of OMR&R Manuals for each element of the project for water management, land management, aquatic weed control, and plant and wildlife management in order to accomplish the objectives of the project.

4.0 Plan Development

4.1 Water Management

Immediately upon completion and acceptance of each project feature, the COE will turn over the responsibility of that feature to SFWMD for operation and maintenance. As the project construction proceeds, interim operations; and maintenance, and interim water control manuals for operation of the pumps and spreader channels will be provided to SFWMD for each completed project feature. Upon completion of the project construction and an operational testing and monitoring phase; a set of final operation, maintenance, and water control manuals will be assembled and provided to the SFWMD.

4.2 Land Management

In accordance with the State of Florida's interagency agreements, the project lands will be managed by the Florida Division of Forestry under the Picayune Strand State Forest. Land management practices for the lands acquired for restoration shall be consistent with project purposes. Restoration will occur by allowing the system to return to as near a natural state as hydrologically possible. However, as the project lands are acquired under the State's Conservation and Recreational Land (CARL) program, for recreational use and forestry management some land management practices including prescribed burning; non-native plant control; and posting to prevent trespassing will be necessary.

4.3 Aquatic Plant Control

The existing aquatic plant management performed by SFWMD in the canals at the project site may not be necessary. However, a limited biological, mechanical, and herbicidal program will be used to manage floating and submerged aquatic plants in the spreader channels and the pools. The categories of plant to be treated annually are projected to be: water hyacinth and water lettuce, hydrilla, and tussock.

Appendix U
Socioeconomics Study Plan

This section is reserved for Socioeconomics Study Plan that will be developed as the project progresses.

Appendix V
Environmental Justice Study Plan

This section is reserved for Environmental Justice Study Plan that will be developed as the project progresses.

Appendix W
Restoration Coordination and Verification Documentation

This section is reserved for Restoration Coordination and Verification Documentation that will be developed as the project progresses.

Appendix X
Project Cooperation Agreement

This section is reserved for Project Cooperation Agreement that will be developed as the project progresses.

Appendix Y
Summary of Work-In-Kind Services

The Summary of Work-In-Kind is provided in Section 14. Additional material generated during this plan, in any, will be included in this appendix.

Appendix Z
Reference Documents and Forms

This section is reserved for Reference Documents and Forms that will be developed as the project progresses.

Appendix AA
Summary of Changes

This section is reserved for Summary of Changes that will be developed as the project progresses.

Appendix BB
Picayune Strand State Forest

This section is reserved for the Picayune Strand State Forest Plan, a copy of which is provided herein.

PICAYUNE STRAND STATE FOREST
POST RESTORATION ROAD PLAN -FINAL DRAFT

Introduction

The Picayune Strand State Forest is made up of the Belle Meade Tract and South Golden Gate Estates Tract (SGGE). A hydrologic restoration plan has been written and reviewed for SGGE, which involves blocking the canals, installing a system of pumps and spreader channels, and road removal. The goal of the plan is to restore the hydrology to near pre- development conditions, while not negatively impacting the flood control for Northern Golden Gate Estates or wildlife species and their habitats. ***This plan is dependent upon state ownership of the affected parcels.***

The post restoration road plan will incorporate the following objectives into the hydrologic restoration:

- Provide management access for prescribed burning, wildfire control, control of exotic vegetation, wildlife management, monitoring, forest product sales, and all other activities approved in the five-year management plan.
- Maintain access to private property outside the project area, specifically into Belle Meade and Fakahatchee Strand.
- Provide public access for hunting, fishing, nature study, and other approved recreational opportunities.
- All weather access to the pump stations for flood control.
- Minimize impact on wildlife caused by the roads that do not intercept sheet flow, by removing unnecessary roads in upland areas.
- Provide travel corridors for wildlife. Panthers and black bears are known to use open areas such as roads, especially through areas of thick undergrowth or deep water.
- Provide access to monitoring sites as established by the SGGE working group.
- Attempt to market the excess fill to reduce costs of the restoration. Where possible remove **all** fills on roads to be abandoned to reduce the need for additional exotic control on those disturbed areas.

Hurricane evacuation routes are **not** a goal of this plan. After restoration it is anticipated that most of the road system will be under water during the rainy season and unsafe for use in front of an oncoming hurricane.

Road Categories

Highway: Federal, state, and county maintained highways. The state forest is bounded by highways on the north, west, and south. However, there is no public access into the PSSF from these highways, except for the wildlife viewing area planned for the Port of the Islands, and from Sabal Palm Road east from Collier Blvd.

Primary Roads: All weather roads open to the public year round. These will require culverts or other types of method to restore sheet flow, while providing for the safety of the public. Average daily traffic is estimated at greater than 50.

Secondary Roads: These gated roads will be at ambient grade, and will use low water crossings, geoweb, and other methods to stabilize the roadbed. The main purpose will be for management access, but include other permitted uses such as hunting and landowner access. These are usually connectors between primary roads to points of travel. Average daily traffic is estimated to be less than 50.

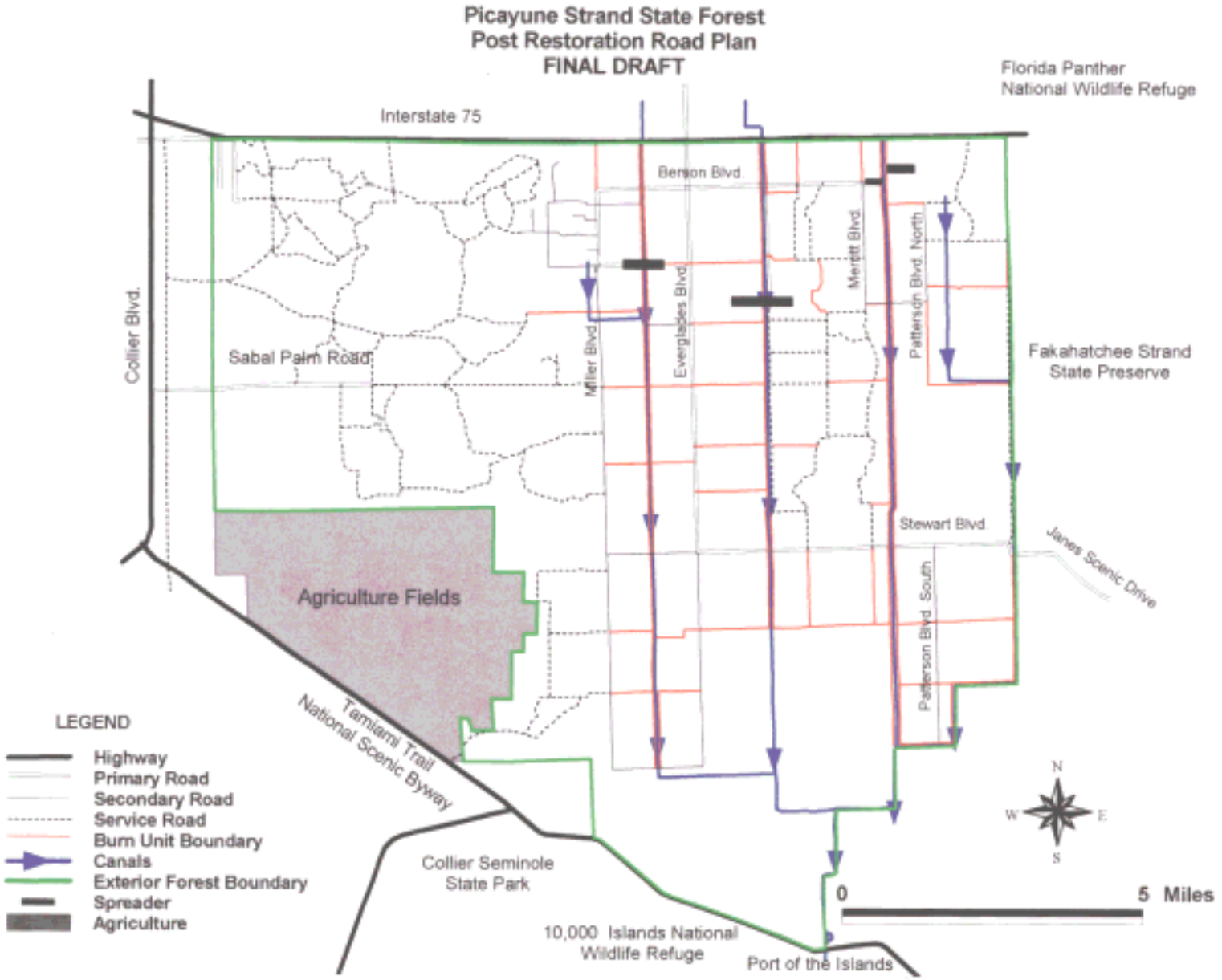
Service Roads: Two Dirt trails, used seasonally for management purposes. These would generally not be stabilized. Average daily traffic is estimated to be less than one. Some service roads may be designated for use by off road vehicles if allowed by the five-year management plan. The density of service roads is higher in Belle Meade than SGGE, due to the heavy Melaleuca infestation requiring control over the next ten to twenty years.

Prescribed burm boundaries: These are to be blocked or gated. They will be mowed annually, and disked before burning, generally once every three to five years. They may also be used occasionally for exotic control or another management purpose. In general, burn unit boundaries will be established along both banks of the canals.

Temporary roads: Work roads may be created on an as needed basis. These will be used for the duration of the project (such as exotic control), restored if needed, and then permanently closed.

Issues to be resolved

The public roads within South Golden Gate Estates are currently maintained by Collier County. As acquisition of the land is completed, the roads would need to be abandoned by the county before the restoration. This will save the taxpayers many thousands of dollars in the future. It has not yet been determined whether the county would continue to maintain those roads, which will be left open to the public.


Picayune Strand State Forest
Post Restoration Road Plan
FINAL DRAFT
Florida Panther
National Wildlife Refuge
Interstate 75
Benson Blvd.
Merritt Blvd.
Patterson Blvd. North
Everglades Blvd.
Miller Blvd.
Collier Blvd.
Sabal Palm Road
Fakahatchee Strand
State Preserve
Stewart Blvd.
Janes Scenic Drive
Patterson Blvd. South
Agriculture Fields
Tamiami Trail
National Scenic Byway
LEGEND
Highway
Primary Road
Secondary Road
Service Road
Burn Unit Boundary
Canals
Exterior Forest Boundary
Spreader
Agriculture
Collier Seminole
State Park
10,000 Islands National
Wildlife Refuge
Port of the Islands
N
W
E
S
0
5 Miles